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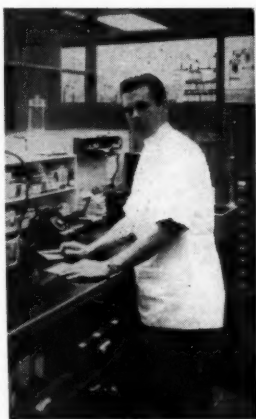
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Number 3

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

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CORTISONE IN ALLERGIC MIGRAINE

J. S. BLUMENTHAL, M.D., F.A.C.P.

Minneapolis, Minnesota

WHILE allergic migraine is regarded as a disease entity characterized by periodic, usually unilateral headaches, associated with nausea, vomiting, various sensory and motor disturbances and a marked hereditary factor, it is also apparent that allergy may cause other types of headaches that do not have all these attributes. The diagnosis of migraine, however, must include at least some of the following:

"1. Recurrent headache, usually throbbing and unilateral at onset, occurring against a background of relative well-being.

"2. Temporary visual disorders preceding the headaches, such as scintillating scotomas, photophobia, hemianopsia and blurred vision.

"3. Nausea, vomiting and irritability, occurring at the height of the attack.

"4. Personality characteristics of inflexibility and shyness in childhood, giving rise to adult perfectionism, rigidity and resentment, ambitiousness and often efficiency.

"5. A history of migraine in the immediate family.

"6. Less frequent symptoms, such as parasthesias, speech disorders, dizziness, sweating and other vasomotor disorders.

"7. Relief by ergotamine derivatives in about 85 per cent of the cases."

The treatment of this condition has been a problem since its recognition. This is, of course, due to the frequently unknown cause of migraine. The present normally accepted theory of the mechanism is the vasomotor theory of imbalance involving spasm and dilatation. The exact cause of this imbalance and the factors responsible are, of course, the usually unknown and important

ones. The very multiplicity of concepts—which include disorders of any and all of the endocrine glands, vitamin and dietary deficiencies, fluid imbalance, toxic agents, gastrointestinal and hepatic disorders, trauma, psychological factors—speaks for itself. While allergy as a major factor in the etiology of migraine has received increasing recognition, it is often impossible to detect the allergic agent and just as often impossible to eliminate it from the patient's environment. Successful treatment based on any and all of these theories frequently are reported. The most consistently symptomatically successful reports have come from the use of ergotamine derivatives. Prevention of an attack may often be best accomplished by psychotherapy and regulation of the life of the individual. There are, however, all too frequently patients who in spite of, all efforts, all theories, all medications do not respond to any great degree. These patients have symptoms severe enough and frequent enough to constitute one of the most dramatic and serious of medical problems. It is these patients that require a new agent to alleviate their difficulties.

As allergic migraine certainly must also be regarded as primarily a disease of adaptation, Selye's¹⁸ concept of the general adaptation syndrome is of great help in understanding this condition. Furthermore, as allergy is probably a major factor in a great many cases of migraine,⁹ it may be theorized that the antigen stimulates the reticuloendothelial system, especially the plasma cells, to produce antibodies. The reaction of the allergen and the antibody results in toxic products which directly or indirectly stimulate

From the Section of Allergy, Department of Internal Medicine, University of Minnesota, Minneapolis.

the hypophysis to produce ACTH. Normally both mineralo-corticotrophic and gluco-corticotrophic stimuli affect the adrenals proportionately. If the response is too violent or the gluco-corticoids production is inadequate, allergic reactions result. As gluco-corticoids mitigate the response of shock organs to allergic stimuli and mineralo-corticoids increase the responsiveness, the degree of sensitivity would depend upon the balance between the two. How these gluco-corticoids diminish sensitivity in cells is not understood.

Immediately after the announcement that cortisone relieved the symptoms of rheumatoid arthritis, it was natural, as indicated by Selye's concept, to assume at once that all the so-called collagen diseases and hypersensitive states would be similarly affected, including migraine. White²⁴ has shown that animals that have had an adrenalectomy show extreme susceptibility to anaphylactic shock. Pretreatment of these animals with cortisone or ACTH gives them protection.² Rose and his associates¹³ had demonstrated on rats the direct relationship between adrenal cortex and the metabolism of histamine and its specific enzyme, histaminase. The tissue and blood histamine was markedly increased and the mechanism for the destruction of histamine impaired following adrenalectomy.¹⁴ They also demonstrated that the ability of histamine aerosols to produce dyspnea was blocked in four patients by ACTH therapy.^{15,16} Segal¹⁰ noted that the abnormal sensitivity of the asthmatic patient to injected histamine was lessened or abolished by treatment with ACTH on repeated injections; but Curry³ noted no such protection against histamine or methacholine by single doses of 50 to 100 mg. of ACTH—an observation also made by Herschfus.⁹ These studies would indicate that ACTH probably does not relieve bronchial allergic spasm through an antihistaminic or anticholinergic action. Cortisone and ACTH, as reported by Kendall,¹⁰ are powerful tools with which it is possible to study problems related to the etiology and treatment of a large group of diseased. Though cortisone and ACTH can produce profound changes in the person with these conditions, the mechanism of action is still very imperfectly understood. It is certainly not a deficiency as no such deficiency of cortisone has been noted in asthma, or other conditions in which it is of such

dramatic though temporary benefit. Sayers¹⁷ suggests that cortisone acts by: (1) interference with the release of or toxic action of anaphylactic substances produced in antigen-antibody reactions; (2) alteration in cell permeability through its action on hyaluronidase; or (3) suppression of responses in mesenchymal tissues. It is easy to see that these types of action would definitely influence allergic manifestations.

When cortisone is given to rabbits, Rogan^{11,12} noted a delay in the development of all elements of connective tissue response. This effect would, of course, interfere with the connective tissue reactions seen not only in hypersensitivity but also in disease activity and wound healing. Taubenhau and Amromin²³ also noted an inhibition effect of cortisone on collagen formation and fibroblasts—the opposite effect from that of desoxycorticosterone.

White²⁴ believes that cortisone acts in the hypersensitive state by: (1) alteration in the relative concentration of antigen and antibody in the tissues; (2) alteration in the tissue factors which influence the combination; or (3) alteration in the tissue response to antigen-antibody reaction.

Be all this as it may, it is sufficient to state that there is early in the course of treatment with ACTH or cortisone physiological changes due to induced hyperactivity of the adrenal cortex. While the conditions treated with ACTH and cortisone have included almost all serious ones the body is heir to, some of the most dramatic results have been reported in the field of allergy with nearly 100 per cent encouraging though temporary results. As would be deduced from the effects of the hormone and confirmed by the literature,²¹ absolute contraindications to the use of cortisone are few but it should be used with caution in diabetes mellitus, psychotic disorders, cardiac failure, during major surgery, severe infections, myocardial infarction, pulmonary embolus, cerebral accidents and probably because of its effect on connective tissue, in tuberculosis, syphilis and peptic ulcers. Equally important is the question of the effects of long continued administration and large dosage. As pointed out by Kendall and others, the answer is not a simple one. In general, however, the response is neither rapid nor long continued. The effects are reversible when the hormone is discontinued.

Beyond that, it is neither necessary nor desirable to give large doses for a prolonged period of time.²⁰ The immediate undesirable effects reported are fluid retention, moon face, acne, hirsutism,¹ irregular menses, changes in mood or psyche, nervousness, fatigue, transient parasthesias, weakness, hypercoagulability, minor changes in carbohydrate metabolism and nitrogen balance.²¹ These are usually not marked and are easily controlled by a reduction in dosage compatible with comfort. While the weakness noted at time has no constant relation to low serum potassium, it is at times desirable to give potassium chloride when the level is below normal. Low sodium diets will usually control fluid retention though very infrequently diuretics may be indicated. Estrone or progesterone will frequently prevent the most annoying of the symptomatic side effects in menopausal women. Above all, suboptimal dosage will minimize these undesirable features as well as the danger of poor healing, missing new clinical symptoms such as active infections, pain, fever, peritoneal irritation from perforated ulcers^{4,5,8} as well as the changes of hyperadrenocorticism.²²

Because of these reports, and as cortisone became more available and relatively less expensive, it was used when the opportunity presented itself to give this hormone to a patient, with migraine probably allergic, who had failed to respond to all types of medication, was desperate, was a definite allergic individual, could afford the treatment, for a prolonged period of time if necessary, and in whom there were no apparent contraindications.

Case Report

E. W., a thirty-six-year-old, white, married executive came to see me February 28, 1950, with complaints of right-sided headache for the past ten years but markedly worse the last five months; dizzy spells of the same duration; hives all his life; asthma ten years and a stuffy nose with a copious watery discharge all his life. The headache was accompanied by nausea and vomiting and usually started with a peculiar odor in his nose, swelling of his eyes and increased plugging of his nose. The attacks had been about the same—once a month up to five months ago and moderate in severity, lasting from a few moments to several hours. Since then they have increased in duration, severity and frequency until now they are more or less constant. Suicide has been seriously and frequently considered. Alcohol was the only known aggravating factor. His asthma, hives and stuffy nose have remained the same

through the years, though these are aggravated by dust, chocolate, lemons. There is no seasonal variation or environmental factors that have been noted by this very intelligent individual. The migraine is so much the overwhelming symptom that all else is secondary. The only symptomatic relief has been given by cafergot (1 mg. of ergotamine tartrate and 100 mg. of caffeine alkaloid) if taken very early in an attack—with relief only at times and only moderate—and in dosage of up to eight tablets at a time and frequently. He had used this dangerous amount in desperation and with full knowledge of the risks involved. Treatment by many capable internists, psychiatrists and allergists with diets, desensitization, climatic changes, hospitalization, fever therapy, innumerable antihistamines, antidiarrheals, parasympathetic depressants and sympathetic stimulants, and nonspecific drugs have been of no avail. He was truly desperate. His past history was essentially negative. The family history showed that his mother had migraine headaches and hives which decreased in intensity with age. One sister, aged forty, and one brother, aged twenty-six, have migraine headaches of moderate severity but no other allergic manifestations.

Physical examination is essentially negative but for the boggy allergic rhinitis type of mucous membrane, and a few expiratory wheezes in the lungs. Routine laboratory work was negative but for a 4 per cent eosinophile count in the peripheral blood. Chest plate, electrocardiogram, basal, skull plates were normal. Skin tests, intradermally, showed very many positive reactions but did not correlate with the history.

Because the patient was really in great distress and very depressed, histamine was given intravenously daily for eighteen days with moderate relief of headaches. Histamine, subcutaneously, was then given daily. At this time the patient was started on an elimination of contact and inhalants which were positive on skin tests. While the allergic rhinitis improved on this regime, the asthma was the same—almost nightly attacks. On elimination diets this also improved. The patient continued on this regime with daily injections of histamine given by the patient himself until October 10, 1950. During this period, however, though his headaches remained less severe, he still had to take 2 tablets of cafergot once or twice a day. Beyond that, he was very lethargic. He said he could not do his work if he took histamine because of lack of energy, and because of his headaches if he did not take histamine. Graduations in dosage were tried as was desensitization with dust and testosterone but to no avail.

On October 10, 1950, he was started on 200 mg. of cortisone daily for two days—with all other medication stopped—then 100 mg. daily for one week and the dosage gradually reduced until October 26 when the hormone was discontinued. After the first dosage he felt much better, and had no headaches, felt elated as is usual with cortisone but still had some wheezing and rhinitis. His urine, weight, and blood pressure remained normal during treatment. He had few headaches until November 17, 1950, when he started to become progressively worse and returned to his pretreatment

CORTISONE IN ALLERGIC MIGRAINE—BLUMENTHAL

level. On December 7, 1950, he returned to see me, at which time cortisone was again started with a similar response to the first series. On December 16 he was placed on a daily maintenance dose of 50 mg. of cortisone orally (25 mg. a.m. and p.m.). He tried several times to stop or reduce the drug but noted recurrence of symptoms within a few days to such an extent that renewal was urgent. He has been symptom free except for occasional wheezing of mild degree. He is at full time work and the only complaint he has is as to the expense of therapy. No complications have arisen and there has been no change in physical or laboratory findings.

While cortisone is certainly not the treatment of choice in allergic migraine, his condition, complicated by asthma and rhinitis, which had resisted all other types of therapy and in which the situation was truly desperate, did respond to this hormone. I will attempt at intervals to stop treatment and/or reduce dosage. Up to the present, under continuous control, no complications have arisen with a dosage of 50 mg. of cortisone daily. It is to be hoped that time and aging will, as usual, take care of the probable basic cause of his migraine: the ability of his cranial vessels to become initially constricted with later hypotonicity.

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REVIEWS OF MEDICAL MOTION PICTURES

The Committee on Medical Motion Pictures has completed the 1951 supplement to the second revised edition of the booklet entitled "Reviews of Medical Motion Pictures." This supplement contains 90 reviews of medical and health films reviewed in *The Journal of the A.M.A.* from January 1, 1951, through December 31, 1951. Each film has been indexed according to subject matter. The purpose of these reviews is to provide a brief descrip-

tion and an evaluation of motion pictures which are available to the medical profession.

Copies have been sent to the secretary of each of the State Medical Societies. Complimentary copies will be sent to County Medical Societies and other medical organizations upon request from: Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

HISTOPLASMOSIS

MILDRED CARIKER, M.D., M.S.

Rochester, Minnesota

IN 1905, S. T. Darling was the pathologist at Ancon (now Gorgas) Hospital, Canal Zone, Isthmus of Panama. In December of that year, on making histologic examinations of material taken at necropsy of a Negro from Martinique, who had died at the age of twenty-seven years, Darling² made an important finding. In the lungs, spleen and liver were tubercles which grossly resembled those of tuberculosis. On microscopic examination, however, in large mononuclear cells lying in the pulmonary alveoli and free in the plasma of the spleen and bone marrow, were multiple round to oval bodies, 1 to 4 microns in diameter, with refractile rims. In 1908 Darling³ reported in detail three cases in which these bodies were found generally in lungs, bone marrow, spleen and liver, and in ulcerations of the small and large intestine. He compared his findings with those of Wright, Leishman and Donovan, reported in 1903, and concluded that the organisms that he had found were not the same as those which they had described and which became known as Leishman-Donovan bodies.

Darling's recorded clinical findings were meager, for the patients had been admitted in terminal stages of the disease, but constant fever, emaciation, enlarged spleen and liver, cough, vomiting, diarrhea, anemia and leukopenia were noted. Darling considered the disease to be a general protozoan infection and suggested that the organism be named "*Histoplasma capsulatum*" and the disease, "histoplasmosis."

Following the writings of Darling there were no more reports of this disease until, in 1926, a case originating in Minnesota was announced by Riley and Watson.¹¹ By 1934, ten cases had been reported, all ending fatally.

In that year, 1934, DeMonbreun⁴ recovered the causative organism in the first case in which diagnosis was made while the patient was alive. A baby, six months of age, was admitted to the hospital with fever, anemia, cough, enlarged spleen, enlarged liver, and roentgenologic findings characteristic of severe bronchitis. The diagnosis was made by finding the yeast-like organisms in films of peripheral blood. The patient died twelve days

after admission to the hospital. At necropsy, tissue from the spleen was obtained and was used for inoculation of several types of media; a fungus was grown which assumed both mycelial and yeast-like forms. The latter grew on media high in protein, and DeMonbreun concluded that the yeast-like form was the parasitic and pathogenic form. This fungus, given intravenously to monkeys, produced a disease like that seen in the child, both from clinical and pathologic standpoints, and the yeast-like and mycelial forms were recovered from the test animals.

The fungus has been classified as one of the moniliaceae of the Fungi imperfecti. The mycelial form has branching, septate hyphae with terminal tuberculate conidia and can be grown on any media favorable to fungi. The yeast-like form, which is thin-walled and oval, and reproduces from a single bud at one end, can be found on passing the fungus through animals or by growing the fungus on a medium high in protein. DeMonbreun postulated that it might occur as a saprophytic fungus free in nature.

As the disease became better understood, more cases were reported, until 123 had been described in the literature by 1949. No doubt the correct diagnosis has been made in a number of cases which have not been reported. The disease is recognized as a systemic one. At first it was thought to be invariably fatal, but in recent years an increasing number of reports have been made of a possible subclinical form, characterized by pulmonary calcification and a positive skin test.

The disease has been encountered in most of the countries of the world but at least three fourths of the cases have been reported from the United States. This latter fact is considered to be attributable more to the interest which the condition has aroused in the United States than to high comparative prevalence here. Patients have come from twenty-five states and, of these, a predominant number have resided in states situated in the middle of the Mississippi Valley and west of the Appalachian foothills.

Patients ranging in age from two months to seventy-seven years have been attacked, and pa-

tients in at least a sixth of reported cases have been in the first year of life. The disease occurs twice as frequently among males as among females.

In the presence of active, acute infections the clinical symptoms may refer the examiner to one or more bodily systems, or they may be generalized, as the disease is essentially a systemic one. There is irregular fever, loss of weight even to such degree that the patient is emaciated, has marked weakness and diaphoresis. Any portion of the skin or mucous membrane may present ulceration, granulomatous swelling and papules. Such lesions, if they are on the lips, tongue, tonsils, palate or pharynx, are very tender and often make it difficult for the patient to eat. The cervical as well as the inguinal lymph nodes may become tender. Respiratory symptoms may be prominent. Among 123 cases of histoplasmosis collected by Hodgson, Weed and Clagett⁷ were found sixty-two in which they considered pulmonary histoplasmosis to be proved. A persistent cough, with or without expectoration, is a dominant symptom. Dyspnea and pleural pain also are present and, less frequently, hemoptysis. The gastrointestinal manifestations of anorexia, nausea and vomiting may accompany the disease when it affects organs other than those of the gastrointestinal tract but, when the gastrointestinal tract becomes ulcerated, abdominal distention, diarrhea and melena are added. In terminal stages there may be neurologic symptoms, including signs of meningitis.

The physical findings are variable. They may be predominantly referable to one organ, but more often the lesions are multiple, and the signs, therefore, are often referable to more than one organ. Usually, there is some pallor and evidence of loss of weight. The skin lesions take the forms of subcutaneous nodules, abscesses, ulcerations and purpuric spots and may appear anywhere on the skin. The mucous membranes are very vulnerable. Weed and Parkhill¹³ reviewed seventy-three cases and found that, in twenty-four, oral lesions were present; moreover, they added four cases in which the presenting lesions were of the mouth and pharynx. These lesions were deep, sharp-edged ulcers of the tongue and granulomatous plaques of the floor of the mouth, tongue, palate and pharynx.

On roentgenograms, evidence of pulmonary

involvement is in no definite pattern and in only about a third of the cases the formation is found which usually is attributed to a fungus infection; that is, peribronchial infiltration extending radially from the hilus. In the remaining cases the lesions may appear as localized infiltration, pneumonic consolidation, generalized miliary involvement, or as definite nodules. Cavitation is of infrequent occurrence but has been found; more frequently there is calcification. Hilar nodal involvement and mediastinal widening are evident in cases wherein lymphadenopathy is prominent.

The liver and spleen were enlarged in Darling's cases, and such enlargement has been described in more than half of the cases reported since. Ulcerations at the anal margin tend to be sites of hemorrhage, as do similar ulcers in the sigmoid. Hypertrophy of superficial lymph nodes or of all lymph nodes frequently is prominent. The cervical nodes are especially affected and are easily accessible for biopsy.

Less common physical evidences of the disease have been cited by Parsons and Zarafontis¹⁰ in their review of seventy-one cases and report of seven. Involvement of the middle ear and aural canal occurred in eight of the seventy-one cases, and true otitis media in five of the eight; in one case there was massive involvement of the nasal septum. A mitral lesion was diagnosed in life and, at necropsy, vegetative masses were found on the valve; these vegetative masses contained the causative organism. Evidence of moderate to severe anemia and leukopenia frequently is found on laboratory examination.

Since DeMonbreun⁴ in 1934 gave proof of the etiologic agent, the diagnosis of histoplasmosis is being made with increasing frequency while the patient is alive. Cultures are highly reliable. Culture of sputum, of material obtained by gastric lavage, of pleural fluid, and of bronchial secretions obtained by bronchoscopy should lead to correct diagnosis of pulmonary histoplasmosis. Culture of material obtained at surgical operation or at biopsy often is the means of making a diagnosis; this is a valuable adjunct to histologic examination. Weed and Parkhill¹³ have advised using the emulsified tissue for inoculation of blood agar plates; the medium contains 50 units each of penicillin and streptomycin to 1 cc. to inhibit bacterial growth.

Direct smear from an ulcerated surface may give the diagnosis; however, only in ulcers of recent development is the fungus usually demonstrable histologically.

The histologic picture at biopsy is a composite of necrosis, exudation and proliferation. The necrotic tissue only occasionally undergoes liquefaction. The exudate is made up of polymorphonuclear leukocytes and lymphocytes and the proliferation is composed of fibroblasts and macrophages. It is in this last type of cell that the round to oval, basophilic staining, causative fungus, *Histoplasma capsulatum*, with its refractile rim, is found, usually packing the cytoplasm with its members.

Sternal puncture has been responsible for several positive diagnoses, the material being subjected to the same procedures as biopsy material which, in fact, it is. Also, a smear may be made of this material, but a smear is less likely to give positive findings. Culture of peripheral blood has given positive results usually in the last days of a fulminating case of the disease, or at the height of an acute febrile episode.

The skin test is having more general use, and is of special value in epidemiologic investigation of pulmonary lesions. Its accuracy has been under discussion in that it has been found to give cross reactions when applied to persons sensitized to other fungus infections, especially in instances of blastomycosis and coccidioidomycosis; even the common *Candida albicans* has been suspected of entering into the reactions. Smith and associates¹² found an increasing number of nonspecific cross reactions to coccidioidin as the sensitivity to histoplasmin rose; however, they did not think the cross reactions interfered with the interpretation. They also found that if the reactor was dominantly sensitive to coccidioidin, there was a much higher degree of cross reaction to the histoplasmin test than otherwise, and in addition, those who were in the process of coming down with the disease, coccidioidomycosis, and were positive to coccidioidin, gave cross reactions with both histoplasmin and blastomycin.

Iams⁸ has made a study of all the reports of skin tests made with histoplasmin, a total of 27,780 tests. Of these, in 38.6 per cent the result was histoplasmin positive. In 18,746 instances, both the histoplasmin and the tuberculin tests were done, with the following results:

histoplasmin positive, 44.13 per cent; tuberculin positive, 8.41 per cent and, finally, both histoplasmin positive and tuberculin positive, 4.05 per cent. In an even further classification, histoplasmin and tuberculin tests were done on 2,577 persons whose pulmonary roentgenograms gave evidence of calcification; of these, 82.5 per cent were histoplasmin positive and 18.3 per cent were tuberculin positive. Iams has expressed the belief that the variables that may influence the test are the lot and dose of the antigen, and the sensitivity of the receiver to one or more mycotic antigens.

The complement-fixation and precipitin reactions have been brought into use in the last few years. They are still not entirely reliable because of cross reactions with the antigens of other fungi. Kunstadter, Whitcomb and Milzer,⁹ however, reported them to be useful in distinguishing between latent and active histoplasmosis in that the titer reaches the peak in the acute phase.

At necropsy, all tissues of the body have been found to be involved. The most involved organs, in order of frequency of involvement, are the lymph nodes (localized and generalized involvement), liver, lungs, spleen, suprarenal glands, intestinal tract, bone marrow, kidneys and oropharynx. The suprarenal glands may be found to be entirely destroyed by necrosis, and the illness, in such a case, may have been diagnosed as Addison's disease. Grossly, the lesions of the lungs suggest the tubercles of tuberculosis, and it remains for histologic examination to furnish the diagnosis. The general picture is one of necrosis and formation of granulomatous tissue, with or without ulcerations of mucous membranes. The disease has been diagnosed incidentally at necropsy when death was from another cause. Christie¹ reported six such cases. Four of the six patients were infants less than one year of age; *Histoplasma capsulatum* was cultured from tubercles in the lung and from cervical and mediastinal lymph nodes.

Clinically and histologically, the disease has been confused with toxoplasmosis, cryptococcosis and leishmaniasis, and clinically it often is mistaken for one of the granulomatous diseases, such as syphilis or tuberculosis. Addison's disease, leukemia and blood dyscrasia also have been offered as clinical diagnoses. Histologic

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diagnoses have included lymphoblastoma, Hodgkin's disease and carcinoma.

In treatment of the disease many substances have been tried but none has proved satisfactory. Various compounds of potassium, antimony, bismuth and arsenic have been used. Radiation has been employed in a few instances for relief of pain from swelling of lesions in the oropharynx. Parsons and Zarafonetis¹⁰ wrote of a lesion of the tongue which first was diagnosed as an epithelioma, grade 1, and which was subjected to radiation but when this lesion recurred it was found to be positive for *Histoplasma capsulatum* and again was subjected to radiation. Five years later the patient was well. A boy, twelve years of age, who had an infection of the upper part of the respiratory tract, and high fever, and whose thoracic roentgenogram gave evidence of infiltration of the lung, was treated by Kunstader, Whitcomb and Milzer⁹ with penicillin and salicylates. Early animal inoculations of bronchial secretions and cultures of peripheral blood were positive for *Histoplasma capsulatum*. Four months later the lung was healed by calcification. Patients have been known to be alive from one to sixteen years after diagnosis; those who lived longest usually had lesions of the skin.

Two cases have been reported by Hodgson, Weed and Clagett⁷ in each of which lobectomy was performed for a single pulmonary lesion. One patient was a man, thirty-six years of age, whose symptoms were hemoptysis and abundant sputum. The thoracic roentgenogram gave evidence of a cystic lesion of the lower lobe of the right lung. A culture of sputum yielded *Histoplasma capsulatum*. The pathologist who examined the surgical specimen reported finding a gray-white mass with a partially necrotic center. This mass consisted of granulomatous tissue composed of necrotic material and fibroblasts which contained *Histoplasma capsulatum*. Here, the fungus seemed to be invasive rather than to have been phagocytosed by the tissue cells. There was infiltration with lymphocytes, plasma cells and phagocytes containing *Histoplasma capsulatum*. Two years later physical examination gave a negative result. The other patient was a woman, thirty-five years of age, who had a lesion of the upper lobe of the right lung and whose sputum, when cultured, was positive for *Histoplasma capsulatum*. The

fungus also was grown from the surgical specimen. The woman was well four months later. The authors believed that in rare instances surgical operation on the lung might be advisable if a localized lesion was found even though the disease is usually systemic, for they considered that surgical removal might delay a more serious outcome. It must not be forgotten that the nature of the disease is to become disseminated and rarely is there enough localization to permit surgical treatment. Histoplasmosis may be present for years without serious lesions developing and yet finally, when a latent focus becomes activated, the disease may prove fatal.

In the last fifteen years, among asymptomatic persons found in epidemiologic surveys, there has been increasing interest in the occurrence of pulmonary calcification in the presence of negative tuberculin tests. Pulmonary calcification always has been considered to be indicative of a healed lesion of tuberculosis, and an accompanying positive result of the tuberculin test would be expected. But the same roentgenologic picture, accompanied by a negative tuberculin test, was appearing increasingly in the states bordering the Mississippi River basin and the western slopes of the Appalachian Mountains. It was in these areas that a majority of the reported fatal cases of histoplasmosis had occurred. The antigen for making skin tests for histoplasmosis became available and, in a high percentage of these puzzling cases, the reaction was positive. Some doubt has been expressed concerning the accuracy of the response as cross reactions are known to be possible. But with improvement of the antigen and standardization of the laboratory procedure cross reactions are becoming less possible; moreover, *Histoplasma capsulatum* has been recovered in some of these asymptomatic cases.

The significance of the asymptomatic pulmonary form of histoplasmosis is that in some points it resembles pulmonary tuberculosis so closely as to be confused with it. In both conditions the antecedent lesions are soft and infiltrative and, in both, pulmonary calcification is a feature. The presumptive diagnosis rests on the patient's sensitivity to tuberculin or histoplasmin and, possibly, on recovery of the causative organism. Healing by calcification can occur in the presence of either disease. For instance, in a case reported by Kunstader,

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Whitcomb and Milzer,⁹ and mentioned earlier in this paper, events began with a nonproductive cough and fever. The thoracic roentgenogram was negative coincident with a positive histoplasmin test. Progress thereafter was through a febrile course accompanied by pulmonary infiltration, and during these developments *Histoplasma capsulatum* was cultured from the blood and from lesions induced in animals inoculated with bronchial secretions. Finally, resolution and calcification occurred. The entire course just described occupied five months.

A careful study of the relationship between pulmonary calcification and sensitivity to histoplasmin has been made by Furcolow⁶; his subjects were Kansas City school children. For two years he followed the progress of several hundred children whose roentgenograms gave evidence of pulmonary infiltration; results of their tuberculin tests were negative, and of their histoplasmin tests, positive. From the lungs of some the infiltrate disappeared and in those of others it became fibrotic, but in most of the cases calcification was the manner of healing. Furcolow reported individually seventeen such cases. In the precalcific roentgenograms there was evidence of disseminated or localized pneumonic infiltration or nodular foci. Cultures of peripheral blood, of pharyngeal secretions, of bronchial secretions and of material obtained on gastric lavage were made. One gastric culture was positive for *Histoplasma capsulatum* and one culture from the tonsil was positive. Calcification occurred in all lesions and hilar nodes as evidenced by thoracic roentgenograms.

In August, 1950, Furcolow⁶ reported sixteen cases, in all of which the patients were acutely ill with the disease. Dominant symptoms and findings were referable to the lungs. In each case *Histoplasma capsulatum* was cultured from sputum, from material obtained by gastric lavage, from sternal marrow, from surgically removed tissue or from peripheral blood. Of these patients, five recovered from the acute phase, and calcification was the terminal finding at the site of the lesion. In one case there was no residual sign of the disease. At the time of the report, all of the patients were well.

Summary

As diagnostic methods improve, the systemic disease, histoplasmosis, is becoming increasingly

important, for it is of more frequent occurrence that has been realized. Since Darling carefully and accurately described the findings at necropsy and the causative organism of the disease as early as 1906, it has become known not only as a fatal disease but as one having also a subclinical form and leaving residual signs such as pulmonary calcification. This makes necessary consideration of histoplasmosis in the differential diagnosis of any lesion of the lung, of any ulceration of the skin or a mucous membrane, of any granulomatous lesion or of any lymphadenopathy. Methods of culture of the etiologic agent, *Histoplasma capsulatum*, are now well known. The fungus has been grown from material obtained at biopsy or at surgical operation, from sternal marrow, from material obtained by bronchial or gastric lavage, from peripheral blood and from secretions taken directly from ulcerated surfaces.

Since it is a disseminated disease, symptoms may be referable to one or all systems of the body. Pulmonary and oropharyngeal manifestations are of frequent occurrence, as are gastrointestinal symptoms; with any of these, weakness, loss of weight and fever are common findings. At necropsy the organism has been found in every organ but particularly in the lungs, liver, spleen, lymph nodes, suprarenal glands, bone marrow, intestinal tract and oropharynx.

No specific medication has been effective. Isolated patients have been treated with penicillin during a febrile course and have survived, but if antibiotics have been used widely, the fact has not been reported. If the disease is limited apparently to one region, such as a lobe of a lung, surgical removal has been effected with subsequent return of health. But it must be remembered that the disease tends to become disseminated and that it may reappear in the same or a distant organ.

The asymptomatic form of the disease is important, not only for itself but because of the necessity of distinguishing it from pulmonary tuberculosis, as healing by calcification may take place in both. A negative tuberculin test in the presence of a positive histoplasmin skin test has been a factor in deciding for the tentative diagnosis of histoplasmosis and, with the intensification of diagnostic efforts, the causative agent,

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TRAUMATIC AMPUTATIONS THROUGH THE FOOT

HARRY B. NEEL, M.D.

Albert Lea, Minnesota

IN an agricultural and industrial community the general surgeon must devote a considerable part of his time to the treatment of trauma. Every effort is exerted to save life, to preserve function and to shorten the period of disability. These objects have always been important to both patient and surgeon, and now, with the increasing legal responsibilities of the employer, the haste with which the injured seeks settlement in court, and the liberal awards granted by some judicial bodies, a third party—the employer, or an insurance company, or another party to an accident—has become greatly interested in attaining these objectives.

Injuries on the highways are certainly increasing with great rapidity, and farm accidents seem far too frequent in agricultural sections. It is my impression that safety precautions instituted by railroads and by industry have effected a diminution in the number of injuries sustained by railroad and industrial workers.

The hand is frequently the site of injury in farm and factory accidents. The machines most commonly responsible for these injuries are cornpickers, saws, punch presses, shredders and belts on machines and motors, to mention a few. In our experience injuries to the foot are far less common and are caused by falling objects, axes, by the feet of farm animals, and by firearms. In the two cases to be presented the foot was partially amputated by the wheels of a train.

When a severely injured individual is seen in the emergency room, the extent of his injuries should be rapidly determined and his general condition evaluated. To me it has seemed wisest to defer thorough exploration of the large wound until anesthesia has been obtained. If shock is a complicating factor, whole blood transfusion and intravenous fluids are indicated and should be readily available. In many instances it is advisable to evacuate the stomach before the administration of general anesthesia.

In the operating room I like to have a large needle in a vein. Intravenous fluids may be given slowly and if blood has not already been started, it can be easily given, should the

necessity arise. The anesthetic which we prefer is intravenous sodium pentothal, supplemented with oxygen by mask, and with nitrous oxide if necessary. During the war it was demonstrated to my satisfaction that these agents constitute the best anesthetic for emergency treatment of wounds of the extremities.

Wounds of the foot may contain ground-in dirt, cloth, leather and grease. The adjacent skin may be crushed. It is our practice to shave the skin, to clean the wound and adjacent skin with soap and water, removing all foreign material during the process. The wound is then irrigated with copious quantities of sterile water. Finally, the skin is dried and painted with tincture of iodine, and sterile drapes are applied.

We now turn to the most important step in the prevention of infection, especially gas gangrene, and that is debridement of the wound. All crushed and devitalized muscle must be excised, dangling ligaments, fragments of tendons and loose fragments of bone removed, bleeding points clamped and ligated, and nerves cleanly cut off so their ends will retract into healthy tissue. It is desirable to preserve bone length but at the same time to avoid leaving those parts which later will become an impediment to good function.

It is difficult to determine the level of skin viability. We have reasoned that it is better to be conservative in removal of skin and to use the available skin to loosely close the wound. At a later date it may be necessary to trim away skin which becomes necrotic and to devise other methods for final wound closure.

The great toe, the most important of the toes, is useful in maintaining a smooth gait and is the only single toe to be left on a foot. All possible length of the great toe should be preserved if it is involved in an injury. A remaining single minor toe serves no useful purpose and because of progressive deformity, it may become the source of annoyance.

A foot stump must have good skin coverage, and muscle balance must be maintained. There is some controversy about the advisability of

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using skin grafts to cover wounds of the foot. In some instances skin grafting has permitted a longer stump and has accelerated wound healing. The graft assumes some of the characteristics

used to cover the wound. Dressings were applied. A prophylactic dose of gas gangrene-tetanus antitoxin was given and penicillin was given intramuscularly.

On August 5, August 11 and again on August 16 the dressings were changed under rectal pentothal



Fig. 1. Foot of boy, aged seven years, following amputation of four small toes, and skin grafting. Good functional result.



Fig. 2. Foot of a brakeman following amputation of the toes by the wheel of a freight car.

of the normal skin of the recipient area and ulceration becomes a smaller problem as time goes on.

The following cases, both railroad accidents, illustrate some of the points under discussion. In each instance the final result has been gratifying.

Case Reports

Case 1.—On the afternoon of July 28, 1950, a little boy, seven years of age, was running beside a moving freight train. He "stubbed his toe," fell, and his right foot was crushed by the wheel of a car. Unknown persons brought the little patient to the hospital at once.

Examination in the emergency room disclosed a slender but well-developed boy of seven years. He was a trifle pale. The pulse was rapid. The heart and lungs were normal to percussion and auscultation. There was no evidence of injury other than to the right foot, the lateral part of which was crushed, and the four minor toes were dangling. Bleeding was moderate.

In the operating room intravenous fluids and whole blood were administered intravenously. The patient was anesthetized with vinethene and ether. The right foot and leg were cleaned with soap and water and the wound irrigated with large quantities of sterile water. The skin was painted with tincture of iodine. It was necessary to remove the four minor toes and their metatarsal bones, all of which were fractured and fragmented. The third cuneiform and the cuboid bones were also crushed and bone fragments were removed. Devitalized muscle was trimmed away. Bleeding was carefully controlled by ligatures of fine catgut. Flaps of skin of questionable viability were

anesthetized. The skin flaps did not survive, so non-viable skin was trimmed away at the line of demarcation. The great toe was in good condition and completely covered with skin. A healthy appearing granulating surface, extending from the heel to the base of the great toe, was approximately 6 inches in length and 3 inches in width.

Wet dressings of normal saline were applied for a few days. On August 26, under rectal pentothal, vinethene and ether anesthesia, a split skin graft 12/1000 of an inch in thickness was taken from the abdomen with the dermatome. This graft was applied to the granulating surface on the right foot and secured with sutures of fine cotton. Pressure dressings and a plaster cast were applied.

The cast and dressings were removed on September 7. The graft was found to have taken very satisfactorily. The edges of the wound soon healed. At first the patient was reluctant to put his foot to the floor but he rapidly resumed his normal gait, wore Western shoes and had no limp.

Case 2.—A brakeman, forty-one years of age, was brought to the Naeve Hospital at 12:45 a.m. on February 11, 1951. The ground was covered with snow and ice, and the patient stated that while looking for a hot box he slipped and the wheel of the train crushed his left foot. He hobbled to a nearby store where assistance was obtained and arrangements made to transport him to the hospital.

The patient was pale but in good general condition. His complaints were restricted to the left foot which was encased in bloody cloths. Examination revealed that the toes of the foot were dangling by their skin attachments. The phalanges and distal ends of all metatarsal bones were fractured and exposed. After a hypodermic injection of morphine sulphate and

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atropine sulphate the patient was taken to the operating room.

In the operating room intravenous fluids were started, and the patient was anesthetized with pentothal sodium and oxygen. The wound and adjacent skin were thoroughly cleaned with soap and water followed by irrigation with copious quantities of sterile water. The dangling toes were removed, the wound was debrided of devitalized muscle and tendons, and the ends of the metatarsal bones were rongeured with preservation of all possible length. There was a long flap of skin from the planter surface of the foot which was brought up and sutured loosely to the skin on the dorsum of the foot. A small drain was brought out through one corner of the wound, a pressure dressing was applied, and the patient returned to his room in good condition.

A prophylactic dose of gas-gangrene-tetanus antitoxin was given and penicillin therapy started. There was never any evidence of infection, but it soon became apparent that all of the skin flap would not survive. When a line of demarcation developed, the gangrenous tissue was excised and wet dressings applied. A healthy granulating surface soon developed.

On March 10, 1951, under pentothal sodium and

cyclopropane anesthesia a split skin graft was taken from the left thigh with the dermatome. The graft was placed on the granulating surface of the left foot and secured with sutures of fine cotton. A pressure dressing was applied.

The dressings were changed for the first time on March 20. The graft had taken satisfactorily and the wound edges healed in fairly rapidly. The patient was dismissed from the hospital on March 28 and was seen as an out-patient thereafter. A prosthesis, consisting of a metal inner-sole for the full length of the shoe and with a pad at the distal end, was secured. The patient walks with a slight limp.

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HISTOPLASMOSIS

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Histoplasma capsulatum, has been recovered from asymptomatic individuals.

The fungus has been thought to be free in nature. Possibly it causes disease by effecting contact with mucous surfaces other than those of a lung, or by material containing the fungus being inhaled. The finding of gastrointestinal lesions has led to consideration of the mouth as a portal of entry. The disease has been found in most countries. Particular interest in diagnosis is evident in the United States, and here the diagnosis most often has been made in the states of the Mississippi River basin and of the western slopes of the Appalachian Mountains.

1108 Twelfth Avenue, N. E.

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THE HYPERSPLENIC STATE

Report of Two Cases Treated by Splenectomy

F. W. CONLEY, M.D.

Duluth, Minnesota

HYPERSPLENISM, through the years, has been the subject of much controversy. Morawitz and Eppinger, in 1919, suggested the use of the term to designate a hyperactivity of the spleen with resultant blood cell depletion.³ That the spleen may become functionally overactive has been proven by Wiseman and Doan,¹⁸ who described primary splenic neutropenia, reporting five cases, some of which, in addition to the neutropenia, showed a hemolytic anemia and a thrombopenia. They stated that anatomically the spleen consists of three structures: (1) the reticulo-endothelial system, (2) the lymphatic component, and (3) the vascular spaces. They were of the opinion that the diseased state is due to hypersplenism in which the reticulo-endothelial cells of the spleen destroy leukocytes at an accelerated speed. It is generally agreed that the spleen has three major functions²: (1) the destruction of red cells, (2) the storage of blood, and (3) the production of lymphocytes from the lymphoid elements of the organ.

How the condition seen in hypersplenism causes the cytopenias has been the subject of debate. The European workers^{4,9} have theorized that there is a hormonal relationship between the spleen and bone marrow. They feel that the reticulo-endothelial cells of the spleen produce a hormone which suppresses maturation of blood cells in the marrow. This theory is also supported by Singer et al.¹³ However, most American hematologists, on the other hand, favor the phagocytic hypothesis, in which the cell depletion is thought to be due to increased phagocytic activities of the enlarged spleen. In support of this, Wiseman and Doan have shown, through direct supravital studies of the splenic parenchyma, that increased phagocytosis exists. This is further upheld by the report of Hirschboeck⁸ who studied a case of Felty's syndrome in which he obtained blood from the splenic vein, prior to splenectomy, which showed 2,600 white cells, and from the splenic artery which showed 11,700 white cells.

The clinical syndromes that have been described under the heading of hypersplenism by Kracke¹⁰

include (1) chronic splenic neutropenia, (2) acute splenic neutropenia, (3) acute and chronic splenic panhematopenia of both congenital and acquired types, (4) familial hemolytic icterus, and (5) idiopathic thrombopenic purpura. Kracke also feels that the depleted cell values of so-called aplastic or hypoplastic anemia may be intensified by increased or normal activity of the spleen and that certain other diseases, such as Hodgkin's, Felty's, et cetera, which involve the spleen, may also be accompanied by an increased splenic cellular destruction. The diagnostic criteria for hypersplenism as suggested by Kracke include (1) a spleen that is clinically enlarged, the single exception being found in some cases of essential thrombopenic purpura; (2) depleted cell values in the blood including neutropenia, thrombopenia, or anemia, or various combinations of these; (3) the demonstration of the fact that bone marrow production is not impaired; and (4) the demonstration of splenic overactivity by the use of the epinephrine test. Dameshek and Estren, on the other hand, feel that the epinephrine test does not show conclusive results, and state that since hypersplenism is a functional and not an anatomic diagnosis, the final diagnostic test is splenectomy.

The triad of cytopenia, rheumatoid arthritis, and splenomegaly, the Still-Chauffard-Felty syndrome is characteristic of the hypersplenic state. This syndrome was first reported as a distinct clinical entity by Felty⁵ in 1924, and subsequently it has been shown that removal of the enlarged spleen produces beneficial hematologic results.

In the hemolytic syndrome we are indebted to Banti,¹ who produced hemolytic anemia experimentally and concluded that the spleen was the central feature of that disease, stating it was a "hemolytic splenomegaly" and suggested splenectomy as a therapeutic procedure. This was first performed by Micheli in 1911. It was later that splenectomy was done therapeutically for idiopathic thrombopenic purpura.

In the field of hemolytic diseases, there are diversified opinions regarding classification. This

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difficulty in grouping the hemolytic anemias in the adult is emphasized by Fowler.⁶ Watson¹⁶ has grouped those cases showing microcytosis as being familial, while those with macrocytosis are of the

derlying process, such as a dermoid cyst in one of their cases, can be removed.

Stickney and Heck¹⁵ have reported twenty-two cases which they termed primary non-familial

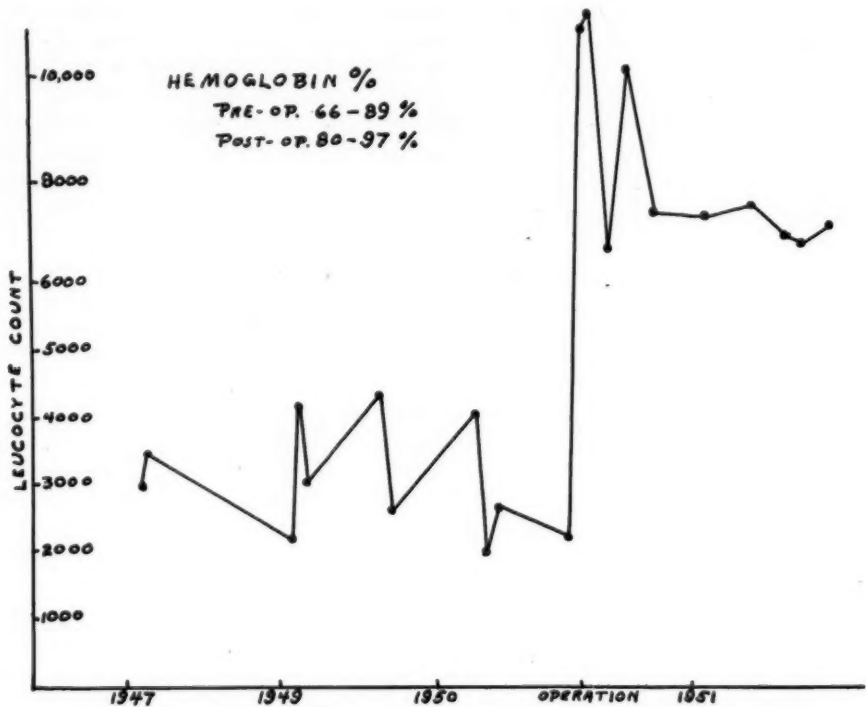


Fig. 1

secondary or acquired type. Singer et al state that a change in the red cell fragility to hypotonic saline solution following splenectomy may give additional aid in differentiating the congenital from the acquired type, i.e., in the acquired group the red cells become less fragile after removal of the spleen. In differentiation, Fowler stresses the importance of the following features which favor the acquired type; onset usually later, more rapid course, less marked or absent red cell fragility, and a smaller percentage of reticulocytes. He reported 13 cases of which he termed idiopathic acquired hemolytic icterus, two of which had splenectomy, both with good response. Symptomatic hemolytic anemia, as reported by Singer and Dameshek,¹² often produces spherocytosis and increased red cell fragility and may present a "pseudomacrocytic" blood picture. They state that splenectomy may be valueless unless the un-

derlying process, such as a dermoid cyst in one of their cases, can be removed. Stickney and Heck¹⁵ have reported twenty-two cases which they termed primary non-familial

Report of Cases

Case 1.—A sixty-three-year-old woman gave a history of rheumatoid arthritis of eleven years' duration. She was first seen in 1947 and at that time had white cell counts of 3,200 and 3,500 with 33 per cent polymorphonuclear cells and a hemoglobin of 77 per cent. A splenomegaly was noted at that time. She was seen again in 1949 and studies done then showed leukocytes 2,300 and 4,200 with polymorphonuclear cells from 31 to 39 per cent; platelets, icterus index, red cell fragility, and liver function tests were all normal. Splenectomy

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was advised but was withheld until the patient's general condition could be improved. She was placed on hematinics and given pentnucleotide to be continued at home. However, a short time later, she developed fever, chills, and a large area of cellulitis in the but-

Case 2.—A twenty-five-year-old white woman who was seen by her attending physician in July, 1950. She complained of nausea, weakness, flank pain and slight fever. On examination, an enlarged spleen was found and she was hospitalized. In her family history there

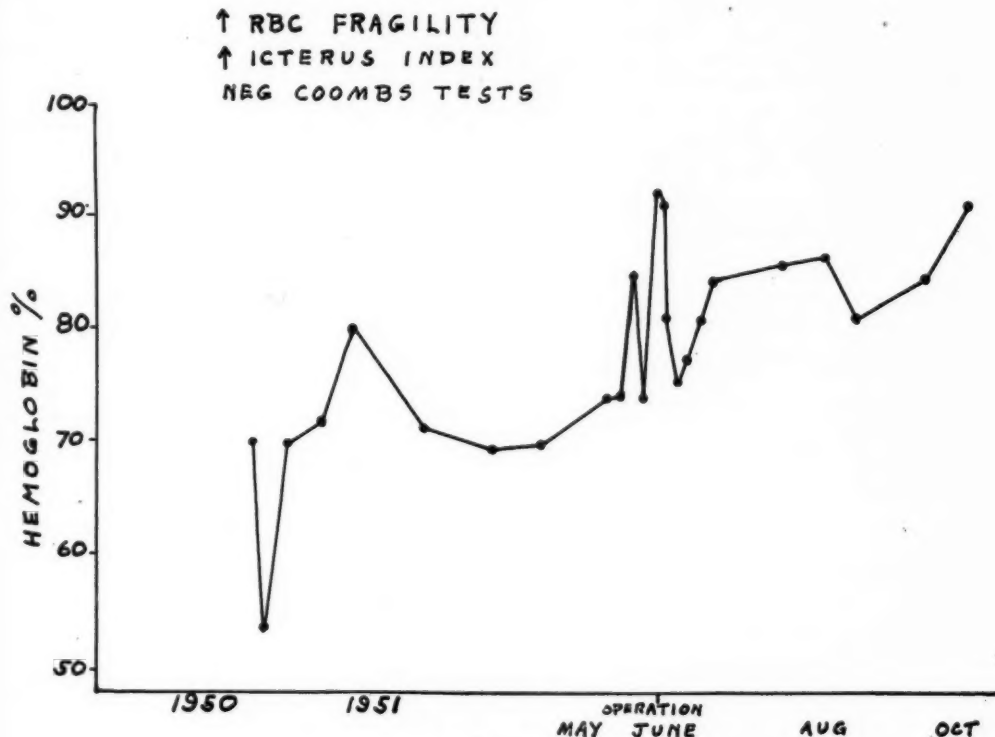


Fig. 2

tock area where she had received the injections. She was hospitalized and blood smears showed a leukemoid reaction, the bone marrow being normal. She was treated with the usual antibiotics and blood transfusions, and again splenectomy was advised.

In March, 1950, she was admitted again for transfusions because of her susceptibility to infections, the white count being 4,200 on this admission. Later in March, she developed an abscess in the right thigh which was drained, the leukocyte counts then being 2,050 and 2,700. In June, 1950, she was admitted for splenectomy. The bone marrow prior to operation was slightly hyperplastic. Preoperatively, the white count was 2,300 with 45 per cent polymorphonuclear cells and hemoglobin 89 per cent. The day after operation the white count was 11,150 with 91 per cent polymorphonuclear cells and the hemoglobin 97 per cent. Figure 1 shows the course of the leukocytes before and after operation. At the time of operation, a 660-gram spleen was removed along with a small accessory spleen in the hilar area. Histologically the spleen showed no phagocytosis of leukocytes. Since the operation, there has been only slight, if any, improvement in the arthritis.

was no evidence of anemia, jaundice, or splenomegaly. She was primigravida and her past medical history was non-contributory. Complete physical examination was negative except for the splenomegaly. Blood studies showed a hemoglobin of 70 per cent, white count 6,600, platelets 100,000, serum bilirubin slightly elevated with an indirect reaction of 2.4 mg., and red cell fragility with hemolysis beginning at 0.72 per cent and complete at 0.40 per cent. Stool urobilinogen was normal. Reticulocyte count was 9.8 per cent, and no free hydrochloric acid was found after gastric stimulation. Liver function studies were all normal. Bone marrow aspiration was reported as hyperplastic but non-diagnostic. It was felt she had possibly pernicious anemia and was given concentrated liver extract, folic acid, vitamin B₁₂ and iron during the course of several months without any particular change in the blood state. Figure 2 shows the hemoglobin percentages during the course of her illness. In May, 1951, she was readmitted for further study. Again the only physical finding was the splenomegaly. At this time the hemoglobin was 74 per cent with slightly over 3,000,000 red cells, white count 9,900, reticulocyte count 3.7 per cent and platelet

count over 200,000. On two occasions, there was a markedly increased red cell fragility with beginning hemolysis over 0.70 per cent. Serum bilirubin was slightly elevated and studies of red cell diameter were normal. The Coomb's anti-globulin test was negative on two occasions. Bone marrow was slightly hyperplastic. Liver function studies were again normal. No spherocytosis was demonstrated. Irregular agglutinins were not studied. The epinephrine test averaged 3,500,000 red cells, 8,900 white cells and 70 per cent hemoglobin prior to injection, with an average of 4,000,000 red cells, 20,000 white cells and 85 per cent hemoglobin following it. There was also a marked contraction of the spleen after injection. It was felt we were dealing with a primary hemolytic state as there was no evidence of any toxic or infectious agents or evidence of any primary disease with an associated hypersplenic state being present. At the time of operation a 957-gram spleen was removed which microscopically showed no evidence of erythrocyte phagocytosis. Following surgery, the hemoglobin percentages have varied from 75 to 92 per cent and the red cell count from 4,000,000 to over 4,500,000. Recheck of the red cell fragility two months postoperatively showed only a slight increase over normal values. She has been asymptomatic since surgery. The opportunity to check the relatives has not been obtained.

Discussion

The value of splenectomy in the hypersplenic state is confirmed by the present report. Hanrahan and Miller⁷ in 1932 performed the first splenectomy in Felty's syndrome. In their case, the leukocyte counts ranged from 800 to 1,600 preoperatively and were 10,000 to 12,000 four months following surgery. Death occurred eighteen months after removal of the spleen, but the cause was not given. Hirschboeck has reported two cases of Felty's syndrome in which splenectomy was done, with the blood picture returning to normal in one. The second patient died six weeks postoperatively of portal vein thrombosis, but prior to operation the white count was 950 and after operation remained over 8,000. Dameshek and Estren³ have also reported a case in a fifty-five-year-old woman who had 1,700 leukocytes which remained over 7,000 following splenectomy. Steinberg's report,¹⁴ as well as that of others,^{11,17} adds further evidence to the value of splenectomy in Felty's syndrome. Numerous authors have also reported the beneficial results of splenectomy in certain of the hemolytic states.

From the present report, the author feels that further emphasis should be placed on careful diagnostic evaluation, and the need of less con-

servatism in regard to the therapy of those cases which are included in the hypersplenic state. Radical, needless splenectomies certainly are to be condemned, as splenectomy is always a serious surgical procedure. However, Young et al¹⁹ have stated that the chances of obtaining substantial benefit from splenectomy are great enough to justify recommending surgery in most cases even though it is impossible to predict which patients will respond favorably. Furthermore, according to Dameshek, if the diagnosis of hypersplenism is correct, splenectomy may be expected to cure the hematologic abnormalities in about 80 per cent of the cases.

Bone marrow depression as the cause of the selective cytopenias in the cases under discussion was not evident, as, in both, histologically, the marrow was slightly hyperplastic. This correlates with the findings reported by Steinberg.

No definite conclusion can be stated from these cases as evidence favoring only one or the other of the hormonal or phagocytic theories.

Summary

A review of the concept of hypersplenism has been presented with the emphasis on the review of pathologic physiology, diagnostic criteria, and the value of splenectomy.

Two cases of hypersplenism in which splenectomy has produced beneficial hematologic results have been reported.

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(Continued on Page 239)

FLUORIDATION OF WATER AND ITS RELATION TO REDUCTION OF DENTAL CARIES

WILLIAM A. JORDAN, D.D.S., M.P.H.

Minneapolis, Minnesota

FLUORIDATION of public water supplies is now widely accepted as a method for reducing the prevalence of dental caries. Of all the preventive methods in use, including toothbrushing, restriction in the consumption of concentrated sugar, and topical application of sodium fluoride, fluoridation offers the greatest hope for preventing caries because of its easy application for large numbers of people and its relatively low cost.

A long series of studies has shown that the controlled fluoridation of public water supplies as a means of reducing tooth decay is economical, safe, and effective. These studies, begun approximately thirty-five years ago, were initiated in an attempt to find the cause of dental fluorosis (mottling of the tooth enamel) in many areas of the United States.

Dr. Frederick McKay's reports on several western communities, including Colorado Springs, Colorado; Oakley, Idaho; Bauxite, Arkansas, and Britton, South Dakota, tell the story of finding the cause of mottled enamel, which was the excessive intake of fluoride in drinking water.* In 1931, the chief chemist of the American Aluminum Company, Mr. H. V. Churchill, in an analysis of water from Bauxite, first detected fluoride as a natural element of water. On Dr. McKay's suggestion, several communities where excessive fluoride was causing mottling of tooth enamel changed their water supply to fluoride-free water and thus eliminated dental fluorosis in the next generation of children.

In the United States today, dental fluorosis is most prevalent in Arizona, Colorado, South Dakota, and Texas. Endemic areas also are found in Arkansas, California, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Minnesota, Mississippi, Nevada, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, South Carolina, Tennessee, Utah, and Virginia.

Practically all the community water supplies of Minnesota contain some natural fluoride, mostly less than .5 p.p.m. Approximately twenty-four

communities have from .5 to .9 p.p.m. of fluoride in the water. Two communities report the ideal amount, 1 to 1.5 p.p.m. Four communities in Redwood and Meeker Counties have reported water analysis showing 2 or more p.p.m. of fluoride. In the early studies of mottled enamel, Graceville, Minnesota, showed evidence of excessive amounts of fluoride in the water supply. That community has changed the source of its water and the fluorosis picture has also changed.

Epidemiology of Fluoride and Dental Caries

It has been observed that wherever mottled enamel or fluorosis existed, there was a great reduction in the prevalence of dental caries (tooth decay). Studies were conducted by Dr. Trendley Dean⁴ and his co-workers as to the relation of the amount of fluoride in the water and the degree of fluorosis as compared with the rate of dental caries. In the twenty-one cities studied, it was observed that the fluoride content in the water had a direct bearing on the severity of fluorosis of the teeth. Figure 1 shows that Lubbock, Texas, with a 4.4 p.p.m. of fluoride in the water, experienced a severe fluorosis condition in 60 per cent of the children. In Colorado Springs, Colorado, the water contained 2.5 p.p.m. of fluoride, and only 18 per cent of the children showed evidence of severe fluorosis. In Monmouth, Illinois, with a fluoride content of 1.7 p.p.m., no severe fluorosis was evident. With this amount of fluoride, Dr. Dean and his co-workers detected very little even of the mild type of fluorosis—a type that the average dentist not trained in this field would not be able to diagnose as such.

In these same studies it was also observed that there was a direct relation between the incidence of dental caries and the amount of fluoride present in the water. Where the water contained less than 0.5 p.p.m. of fluoride, the DMF rate (decayed, missing and filled permanent teeth) in children twelve to fourteen years of age was 725 teeth per 100 children, or 7.25 teeth affected per child. Figure 2 shows that cities with 0.5 to 0.9 p.p.m. of fluoride reveal a DMF rate of ap-

*Dr. Jordan is Director, Division of Dental Health, Minnesota Department of Health.

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proximately 4 teeth per child. In cities of 1 to 1.4 p.p.m. of fluoride, the rate was even less than 3 DMF teeth per child. Where the fluoride content of water exceeded 1.5 p.p.m., the caries rate was slightly less than in those where the

2. About 75 per cent decrease in loss of first permanent molar teeth.
3. Approximately 95 per cent less caries in the proximal surfaces of the four upper incisors.

Severity of Mottled Enamel in Children of Ten Selected Cities and the Mean Annual Fluoride (F) Content of the Municipal Water Supply

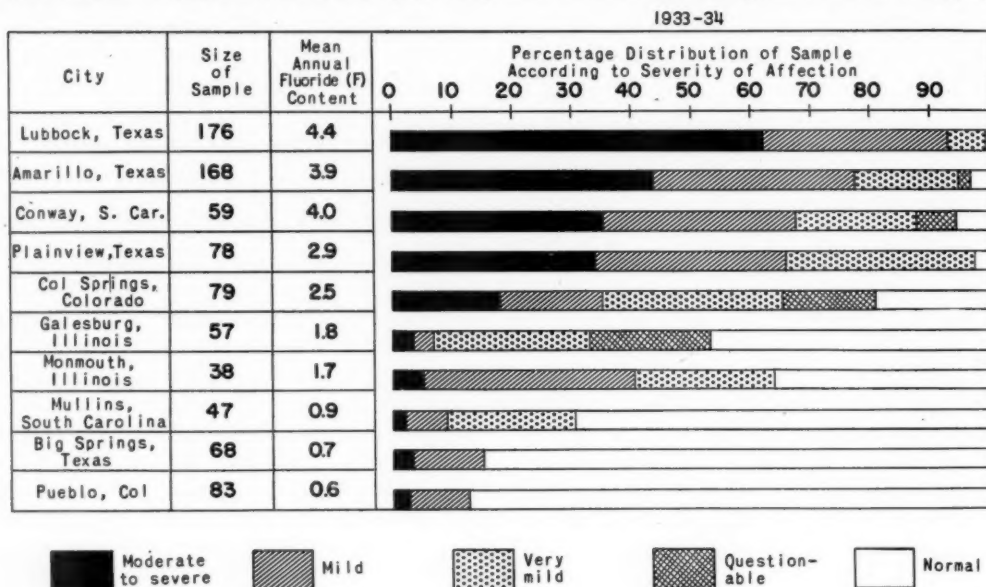


Fig. 1.

fluoride content was from 1 to 1.4 p.p.m.

Figure 1 shows that fluorosis of the enamel is not evident at 1.7 p.p.m. or less, and in Figure 2 the lowest incidence of dental caries is shown in areas where the fluoride content of the water is 1 to 1.5 p.p.m. or more. On this basis Dr. Dean and the U. S. Public Health Service recommend that 1 to 1.5 p.p.m. of fluoride in the water ingested during the developmental period of the teeth (which is about the first ten years of the child's life) will reduce dental caries approximately 65 per cent, with no detectable fluorosis. Dr. Dean's studies further demonstrated that where fluoride is found naturally in the water one may expect:

1. About six times as many children having no dental caries experiences as in areas where little or no fluoride is found.

Dr. Wallace Armstrong¹ of the University of Minnesota demonstrated that a sound tooth had twice as much fluoride content in the enamel as a carious tooth. He further demonstrated that a tooth affected by fluorosis had twice the amount of fluoride as a sound fluorosis-free tooth.

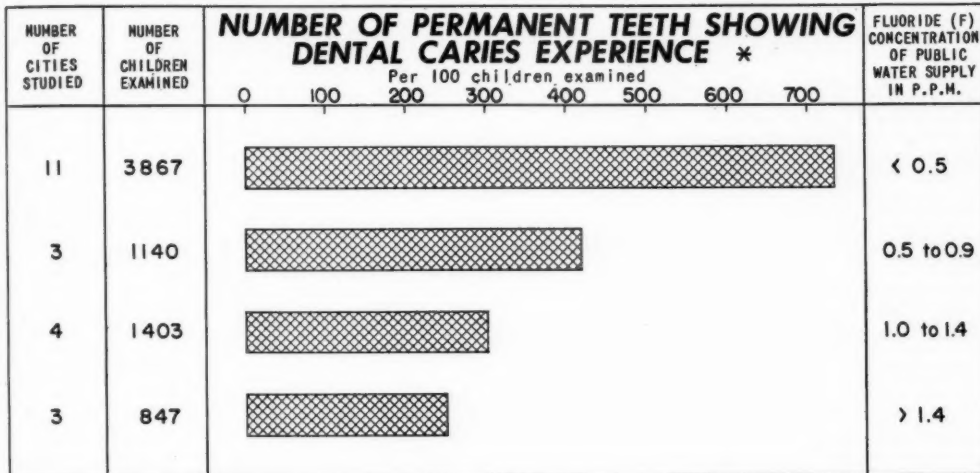
Minnesota's Fluoride Areas

Minnesota does not have many areas with sufficient fluoride to reduce dental decay. In a few small communities in the Meeker and Redwood County area, the water supplies reveal 1 or more p.p.m. of fluoride. In April, 1951, the Minnesota Department of Health made dental examinations of the eleven to thirteen age group in Walnut Grove and Milroy.⁹ Both these communities had a fluoride content of 2 p.p.m. These dental examinations were compared with those on the

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same age group in Hinckley and Grand Marais where the fluoride content was insignificant at the time of the examination. Table I reveals that the children born and residing continuously in the villages of Milroy and Walnut Grove had a DMF

duction in dental caries as natural fluoridated water. Several studies were inaugurated in the United States and Canada on a ten-year basis. Most of these studies have now been under way for more than five years. The studies in Grand



* Dental caries experience is computed by totaling the number of filled teeth (past dental caries), the number of teeth with untreated dental caries, the number of teeth indicated for extraction, and the number of teeth missing (presumably because of dental caries).

Fig. 2. Amount of dental caries (permanent teeth) observed in 7,257 selected twelve-to-fourteen-year-old, white, school children in twenty-one cities of four states; classified according to the fluoride concentration of the public water supply. From Dean, H. T.; Arnold, F. A., Jr., and Elvove, E.: Pub. Health Rep., 57:1155-1179 (Aug. 7) 1942.

TABLE I. COMPARISON OF CARIES EXPERIENCE IN THREE MINNESOTA AREAS
Milroy and Walnut Grove water supplies contain 2 to 2.1 p.p.m. fluoride

		Grand Marais November, 1950	Hinckley October, 1950	County* Milroy- Walnut Grove April, 1951	Village** Milroy- Walnut Grove April, 1951
Group	Examined	11-13 years	11-13 years	Grades 6-8	Grades 6-8
Number	in Group	113	108	195	32
Per cent	of Children with DMF Teeth	98.2	97.2	75.9	65.6
Average	DMF Teeth	7.14	6.43	3.36	1.80
Average	Lost Permanent Teeth	0.38	0.72	0.15	0.13

*Milroy-Walnut Grove children in grades 6-8, inclusive, who have lived all their lives in or near Redwood County.

**Milroy-Walnut Grove children in grades 6-8, inclusive, who have lived all their lives in Milroy or Walnut Grove.

rate of 1.8 teeth per child as compared with rates of 7.14 and 6.43 in Hinckley and Grand Marais, respectively. Children born in Redwood County and attending school in Milroy or Walnut Grove reveal a rate of 3.36 teeth per child.

Controlled Fluoridation

Controlled studies were developed to determine if fluoride added to fluoride-free water in controlled amounts would result in the same re-

Rapids, Michigan, and in Newburgh, New York, have been watched closely. In each case annual physical and dental examinations have been made on all children in the age group 3-17 years. The results after five years' application of 1 p.p.m. of fluoride to the water supply of Grand Rapids, Michigan, is revealed in Figure 3.⁵ Muskegon was the control city for this study. Both cities receive their water supply from Lake Michigan. These two cities in turn are com-

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pared with Aurora, Illinois, which has a water supply showing a content of 1.2 p.p.m. of fluoride naturally. The DMF rate of the lower age groups in Grand Rapids after five years parallels the rate in Aurora. Similar conclusive

community interested in a water fluoridation program. Public health engineers in the eight health districts of the state are likewise prepared to give local communities consultation and advice on this subject.

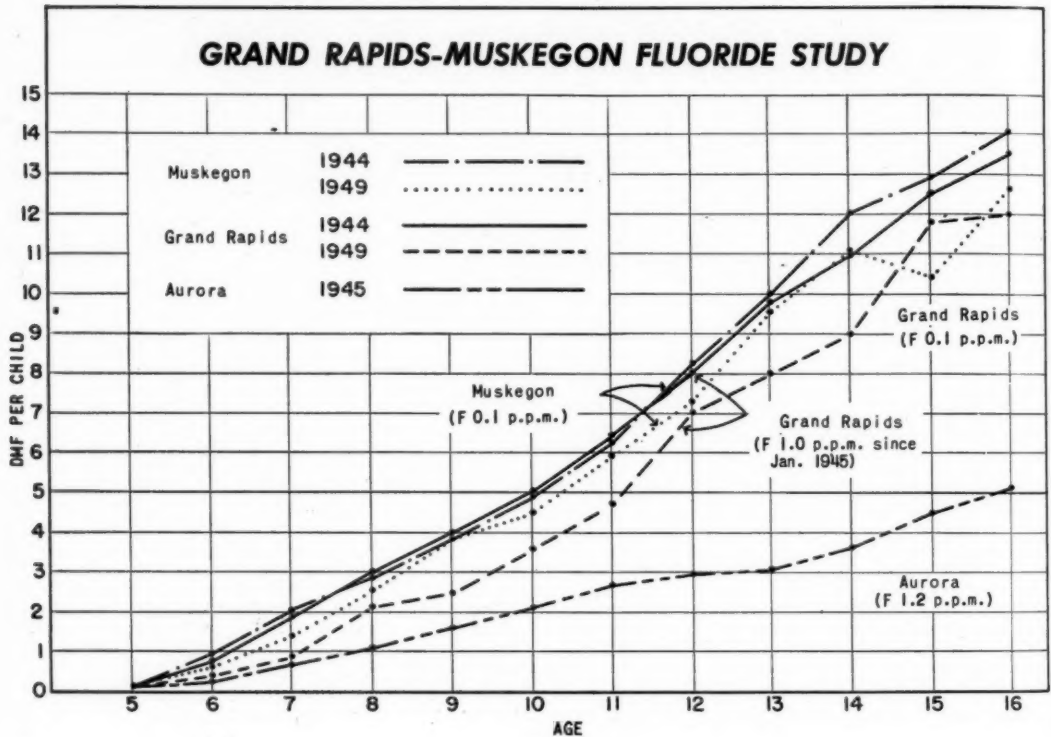


Fig. 3.

results have been published from Newburgh.² The older children receive some benefits, but the greatest reduction is achieved when the child from birth drinks water containing 1 to 1.5 p.p.m. of fluoride and remains in residence until the crowns of the permanent teeth are fully formed—a period of approximately ten years. Following that period the benefits are lasting regardless of where the individual resides.

Fluoride in water is colorless, odorless, and tasteless. In Minnesota, the State Health Department advocates, wherever a community wishes to proceed with a fluoridation program, that 1.2 p.p.m. of fluoride be added to the water supply. Members of the Divisions of Dental Health and Municipal Water Supply of the Minnesota Department of Health are prepared to assist any

HEALTH DISTRICT OFFICES AND PUBLIC HEALTH ENGINEERS

Health District	Headquarters	Public Health Engineer
I	Bemidji	Mr. Robert H. Pinther
II	Mankato	Mr. Elmer A. Huset
III	Rochester	Mr. F. J. Kilpatrick
IV	Duluth	Mr. H. G. Formo
V	Worthington	Mr. A. C. Larson
VI	Minneapolis	Mr. Daniel L. Baer
VII	Fergus Falls	Mr. Frederick Heisel
VIII	Little Falls	Mr. Andrew J. Starin

Types of Installations

There are three methods of feeding fluoride into the water supply—solution feed, dry volumetric, and dry gravimetric. The solution feed method is adapted to small communities. The volumetric feeder will serve the water supply of communities between 20,000 and 50,000 population. The gravimetric feeder is

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generally used in larger cities. Solution feeders may be installed for \$500 or more, according to the capacity and auxiliary equipment needed. Dry feeders cost considerably more. Public health engineers should be consulted regarding the type best suited to each community. The manufacturers of this equipment state that they will be happy to give consultation on cost and installation. All equipment is automatically controlled and equipped with all safety devices in accordance with state laws.

Fluoride Compounds Used

Sodium fluoride is being used in many water fluoridation projects because it is readily available and convenient to use, dissolves easily, and has been the subject of extensive studies on toxicity and physiological effects.

Sodium silicofluoride (sodium fluosilicate) is one of the most economical compounds. It provides available fluoride at from one-third to one-half the cost of that obtained from sodium fluoride.

Hydrofluosilicic acid, while more costly than sodium silicofluoride, can be fed directly into water supplies without considering solubility and with the least handling.

Hydrofluoric acid is being used in one city—Madison, Wisconsin. It is dangerous to handle, corrosive, and not recommended.⁷

Fluoride is placed in a water supply in a manner similar to the addition of other elements used in water departments.

Testing Fluoride Content

A colorimetric testing device has been developed to determine the amount of fluoride in the water to within 0.20 parts of fluoride per million parts of water. The average water works operator in a small community can make the determinations with reasonable accuracy. These tests are made several times a day at the beginning of the program and are rechecked by tests made by district or state health departments. Occasional check of tap water will determine the fact that the fluoride has reached all areas of the water system.

Cost of Fluoridation Programs

For a cost of 5 to 14 cents per capita per year, the next generation of children can have better dental health.⁶ The Red Lake Falls installation

TABLE II. ECONOMICS OF FLUORIDATION*

MADISON—.005 p.p.m. Fluorine			
Dental Decay Experience and Expense Through Average Age 16			
Baby Teeth	Avg. DMF units	10.28 at \$ 3.00=	\$30.84
Perm. Teeth	Avg. DF units	16.66 at \$ 4.00=	\$66.64
	Avg. M units—restored	3.21 at \$25.00=	\$80.25
	Avg. M teeth—extracted	1.07 at \$ 5.00=	\$ 5.35
Total average dental expense per person \$183.08			
UNION GROVE—1.2 p.p.m. Fluorine			
Baby Teeth	Avg. DMF units	3.12 at \$ 3.00=	\$ 9.36
Perm. Teeth	Avg. DF units	4.30 at \$ 4.00=	\$17.20
	Avg. M units—restored	0.48 at \$25.00=	\$12.00
	Avg. M teeth—extracted	0.16 at \$ 5.00=	\$.80
Total average dental expense per person \$39.36			
Cost of Fluoridation 25 cents per year × 16 = \$4.00			
Saving of \$143.72 or \$35.93 for \$1.00 invested			

*Dane County Dental Society, Wisconsin, Fluorine Committee.

for a population of 1,700 cost about \$700, including equipment, electrical installations, plumbing, jars for solution, testers, and cabinet. The annual maintenance is estimated at 5 cents per capita.

The total daily cost of adding sodium fluoride to the water supply of an average town of 10,000 is about \$2.25. If sodium silicofluoride can be used, the daily cost may be about 75 cents. On a per person basis, sodium fluoride costs about 11 cents per year, silicofluoride about 5½ cents. Amortized over a twenty-year period, the annual cost of equipment for feeding fluoride into the water supply is almost negligible.

At the rate of 14 cents per person per year and in a life span of 75 years, an individual would pay \$10.50 for two-thirds less dental decay and two-thirds less dental bills. Table II shows a comparative study of dental cost for a sixteen-year-old individual in Madison, Wisconsin, which had fluoride-free water, and for a similar individual in Union Grove, Wisconsin, which has 1.2 p.p.m. of fluoride. The dental expenditure of the Union Grove sixteen-year-old is approximately 78 per cent less than that of his counterpart in Madison. (Fluoride is now being applied to the water in Madison.)

For an annual investment per person of the price of one candy bar or a little more, the community can bring greatly improved dental health to its younger children. The children of today are the adults of tomorrow. As the fluoridation program continues, more and more individuals will benefit until the whole population is protected.

Dr. A. L. Russell¹⁰ reports that adults twenty to forty-four years of age show continued

FLUORIDATION OF WATER—JORDAN

TABLE III. DEATH RATES PER 100,000 POPULATION FROM SELECTED CAUSES IN WISCONSIN CITIES WITH VARYING CONCENTRATIONS OF FLUORIDE IN PUBLIC WATER SUPPLIES, 1945-1949*

City	Green Bay	Stevens Point	Sheboygan	Sheboygan .03 p.p.m. (pre-fluoridation 1940-44)
Fluoride Concentration in Water Supply	2.5 p.p.m.	0.02 p.p.m.	1.2 p.p.m.	
Leading Causes of Death				
Heart	279.7	298.5	340.9	311.0
Cancer	131.6	136.2	137.7	148.1
Cerebral hemorrhage	103.3	77.0	124.2	97.9
Nephritis	28.7	32.0	21.7	41.3
Pneumonia	19.0	33.2	23.9	28.5
Diabetes	20.9	34.3	24.4	32.5
Tuberculosis	7.8	14.2	19.4	32.5
Influenza	8.2	2.4	4.5	8.4
Appendicitis	5.2	3.6	2.3	4.4

*Source: Wisconsin State Board of Health, continuous resident data.

benefits of fluoridated water. Comparisons were made between the age groups twenty to forty-four in Colorado Springs and persons of similar age in Boulder, Colorado. The water supply of Colorado Springs contained 2.5 p.p.m. of fluoride, while Boulder water was fluoride-free. Only those adults who were born and maintained a continuous residence in their respective communities were involved. Dental examinations showed that the group in Colorado Springs had a 60 per cent lower dental decay rate than the same age group in Boulder. The Boulder natives had lost three to four times as many permanent teeth from dental caries as the natives of Colorado Springs.

Today the controlled fluoridation program as a means of reducing dental caries is approved by the:

American Dental Association
 American Association of Public Health Dentists
 State and Territorial Dental Directors Association
 State and Territorial Health Officers Association
 American Public Health Association
 U. S. Public Health Service
 American Water Works Association
 American Medical Association
 Minnesota State Dental Association
 Minnesota Department of Health

The controlled fluoridation of domestic water is more beneficial than the natural occurrence of fluoride in the water, because with controlled fluoridation, the public is assured that a constant amount of fluoride, 1.2 p.p.m., is in the water at all times. Natural fluoridated water varies with the seasons. The controlled program also assures the public of reduction of dental caries without fluorosis.

There is no evidence that fluoridated water con-

tributes to the increase of various diseases (Table III).

Observations on the 3,000,000 people using water with 1.0 to 8 p.p.m. of fluoride in the western states area from South Dakota down through Texas give assurance that fluoridated water does not create any adverse physical defects other than fluorosis on the dental enamel where fluoride is present in excessive amounts. In that area:

1,000,000 people use water containing 1.0—1.5 p.p.m. of fluoride
 900,000 people use water containing 1.6—2.0 p.p.m. of fluoride
 600,000 people use water containing 2.1—3.0 p.p.m. of fluoride
 100,000 people use water containing 3.1—5.0 p.p.m. of fluoride
 40,000 people use water containing 5.1—or higher p.p.m. of fluoride

Drs. C. P. Cox and David B. Ast state that acute morbidity, manifested by increased salivation and vomiting, may be caused by 0.25 gm. sodium fluoride.³ This quantity in an 8-ounce glass of water represents 1,000 p.p.m. of sodium fluoride or about 450 p.p.m. of fluoride. To obtain this concentration would require more than four tons of sodium fluoride per million gallons of water treated, which is obviously not possible in a program of water fluoridation, even if gross negligence occurred.

Approximately 140 communities within the United States are operating a controlled fluoridation program at the present time. Some of the larger cities that have started or are in the process of starting such a program are Philadelphia, Pennsylvania; Baltimore, Maryland; San Francisco, California; Saint Paul, Minnesota; Madison and Milwaukee, Wisconsin, and Washington, D. C.

In Minnesota, thirteen communities are now adding fluoride to their water supply. They are Red Lake Falls, Thief River Falls, Fergus Falls, Montevideo, Fairmont, Winnebago, West Concord, Ely, Granite Falls, Hallock, Arlington, Benson, and Hutchinson. At least fourteen other communities are known to have ordered equipment and will start adding fluoride in the near future. All fluoridation plans for Minnesota communities must be approved by the Division of Municipal Water Supply, Minnesota Department of Health.

(References on Page 265)

MINNESOTA MEDICINE

AUTOPSIES REPORTED ON MINNESOTA DEATH RECORDS

J. W. BROWER, M.A., and E. W. STOREY, M.S.

Saint Paul, Minnesota

AN awareness of a growing interest on the part of physicians in autopsies prompted a limited survey of the extent to which the post-mortem examination is performed in Minnesota. While the restricted scope of the analysis makes for inconclusiveness, it is nevertheless felt that the results of the study may be indicative of present trends.

However, since the greater portion of deaths occurs in the cities of Minneapolis, Saint Paul, and Duluth, a comparison was drawn, as shown in Table I, with the data contained in the death records of these three cities only for the comparable six-month periods in the years 1921, 1931, and 1941. It will be observed that the increase in number, as computed percentage-wise,

TABLE I. A THREE-CITY COMPARISON OF AUTOPSIES PERFORMED

Cities	Deaths—All Causes				Autopsies Performed				Per Cent of Cases Autopsied			
	1921	1931	1941	1951	1921	1931	1941	1951	1921	1931	1941	1951
Total for three cities	3,572	4,561	4,620	5,171	419	1,120	1,167	1,573	11.7	24.6	25.3	30.4
Minneapolis	1,980	2,538	2,576	2,819	230	574	514	785	11.6	22.6	20.0	28.2
Saint Paul	1,147	1,459	1,479	1,703	171	399	460	526	14.9	27.3	31.1	30.8
Duluth	445	564	565	649	18	147	193	252	4.0	26.1	34.2	38.8

Source of Data

The question "Was there an autopsy?" first appeared on the Minnesota death certificate in the 1918 issuance of these forms. Since 1920 the autopsy question has continuously been a part of the Minnesota record of death. On the forms prescribed by the Minnesota State Board of Health for the years 1920 to 1941, the autopsy item was represented merely by the question "Was autopsy performed?" From 1941 to 1947 the medical certification portion of the death record provided space for "Major findings of operation . . . of autopsy." The item was returned in 1947 to the phrasing used from 1920 to 1941, and in the new uniform certificate of death, adopted in 1950 and presently in use, the item was further simplified to appear thusly:*

20. Autopsy?

Yes ☐ No ☐

For this study a tabulation of the responses to the autopsy question on the records of death occurring in Minnesota during the six-month period, April 1 through September 30, 1951, was

*Casady, Gladys G., and Brower, Jerome W.: New forms of vital records in 1950, *Minnesota Med.*, 32: 1193-1198 (Dec.) 1949.

Mr. Brower is Assistant State Registrar of Vital Statistics, and Mr. Storey is Statistician, Division of Vital Statistics, Minnesota State Board of Health.

is more pronounced between the years 1921 and 1931, being particularly noticeable in the data for the City of Duluth, but the gain between 1941 and 1951 is relatively insignificant. Saint Paul actually had a slight percentage loss over the comparable six-month period in the year 1941.

The 1951 Analysis

A total of 13,866 deaths occurred in the state during the six-month period, April 1 through September 30, 1951, covered by this study. And 2,274 autopsies (16.4 per cent of the total) were performed on these deaths. No autopsy was reported in 8,199 deaths (59.1 per cent of the number), while the information was omitted on 3,393 records, representing 24.5 per cent of all deaths. The factors analyzed include geographic distribution, autopsies in hospitals, autopsies in medical certifications by physicians and coroners, and autopsy variations by cause of death.

Geographic Distribution

Table II shows that the largest number of autopsies was performed in Minneapolis. Of the deaths studied 20.3 per cent occurred in Minneapolis, while 35.0 per cent of all autopsies were done there. It will be noted that 28.2 per cent of all Minneapolis deaths were autopsied. The largest proportion of autopsies, for an

AUTOPSIES—BROWER AND STOREY

TABLE II.
AUTOPSIES PERFORMED BY GEOGRAPHIC AREA,
APRIL 1 TO SEPTEMBER 30, 1951

Reporting Area	Total Deaths	Was Autopsy Performed?		
		Yes	No	Not Stated
Number:	13,866	2,274	8,109	3,393
Minneapolis C.	2,819	795	1,531	493
Saint Paul C.	1,708	526	877	305
Duluth C.	649	252	312	85
Rochester C.	557	24	28	505
Fort Snelling VA Hospital	175	131	44	—
Other urban areas	3,903	374	2,615	914
Other rural areas	4,055	172	2,792	1,091
Per Cent by State Total:	100.0	100.0	100.0	100.0
Minneapolis C.	20.3	35.0	18.7	14.5
Saint Paul C.	12.3	23.1	10.7	9.0
Duluth C.	4.7	11.1	3.8	2.5
Rochester C.	4.0	1.1	0.3	14.9
Fort Snelling VA Hospital	1.3	5.8	0.5	0.0
Other urban areas	28.1	16.4	31.9	26.9
Other rural areas	29.3	7.5	34.1	32.2
Per Cent by Area:	100.0	16.4	59.1	24.5
Minneapolis C.	100.0	28.2	54.3	17.5
Saint Paul C.	100.0	30.8	51.3	17.9
Duluth C.	100.0	38.8	48.1	13.1
Rochester C.	100.0	4.3	5.0	90.7
Fort Snelling VA Hospital	100.0	74.9	25.1	0.0
Other urban areas	100.0	9.6	67.0	23.4
Other rural areas	100.0	4.2	68.9	26.9

entire city, 38.8 per cent of all deaths, was found in Duluth. Less than 10.0 per cent of the deaths occurring in urban areas outside Minneapolis, Saint Paul and Duluth were autopsied. On the basis of the affirmative answers appearing on the death certificates received from the rural areas of Minnesota, less than 5 per cent of all deaths were autopsied. The Veterans Hospital at Fort Snelling, however, performed autopsies on 74.9 per cent of its deaths.

Autopsies in Hospitals

For analysis purposes, hospital and institutional deaths were grouped into four categories: general hospitals, including maternity homes and nursing homes offering medical and nursing care; state hospitals for the mentally ill; tuberculosis sanatoria, and veterans hospitals. The study revealed that 77.4 per cent of all autopsied deaths, as shown in Table III, occurred in general hospitals, 3.4 per cent in state hospitals, 1.8 per cent in tuberculosis sanatoria, 6.3 per cent in veterans hospitals, and 11.1 per cent took place outside of these institutions.

Veterans hospitals autopsied 75.0 of their deaths; tuberculosis sanatoria, 47.1 per cent; general hospitals, 23.3 per cent; and state hospitals, 16.2 per cent. Autopsies were per-

TABLE III.
AUTOPSIES IN HOSPITALS

Place of Death	All Deaths	Was Autopsy Performed?		
		Yes	No	Not Stated
Number:	13,866	2,274	8,199	3,393
General hospitals	7,536	1,759	3,898	1,879
State hospitals	476	77	270	129
Tuberculosis sanatoria	87	41	42	4
Veterans hospitals	192	144	48	—
Non-hospitalized	5,575	253	3,941	1,381
Per Cent of State Total:	100.0	100.0	100.0	100.0
General hospitals	54.3	77.4	47.5	55.4
State hospitals	3.4	3.4	3.3	3.8
Tuberculosis sanatoria	0.6	1.8	0.5	0.1
Veterans hospitals	1.4	6.3	0.6	0.0
Non-hospitalized	40.3	11.1	48.1	40.7
Per Cent by Type of Hospital:	100.0	16.4	59.1	24.5
General hospitals	100.0	23.3	51.7	25.0
State hospitals	100.0	16.2	56.7	27.1
Tuberculosis sanatoria	100.0	47.1	48.3	4.6
Veterans hospitals	100.0	75.0	25.0	0.0
Non-hospitalized	100.0	4.5	70.7	24.8

formed on only 4.5 per cent of all deaths occurring outside of these institutions.

Autopsy information was omitted on 25.0 per cent of general hospital deaths, 27.1 per cent of state hospital deaths, 4.6 per cent of the tuberculosis sanatoria, and 24.8 per cent of the non-hospitalized deaths. The veterans hospitals reported the information for all deaths.

Autopsies in Medical Certification by Physicians and Coroners

Physicians certified 87.6 per cent of the causes of death in the group under study. They certified 88.4 per cent of all deaths on which autopsies were performed. As shown in Table IV, 16.6 per cent of the deaths certified by physicians and 15.3 per cent of the deaths certified by coroners were autopsied.

The Causes of Death Reported in Autopsy Cases

With reference to the various causes of death, there is apparently a wide variation in the proportion of autopsies performed (Table V). For example, 55 per cent of the maternal deaths were autopsied. Deaths due to intracranial vascular lesions, general arteriosclerosis, hypertension without mention of heart disease, and suicide were autopsied in less than 10.0 per cent of the cases reported. Autopsies were done in over one-third of the deaths due to infective and parasitic diseases, diseases of the digestive system, nephritis and nephrosis, congenital mal-

AUTOPSIES—BROWER AND STOREY

formations, and homicide. The groupings of the causes of death represent those in which there are particular public interest, including the leading causes of death for the State.

4. Autopsies are most common in patients hospitalized in general hospitals or veterans hospitals.

5. There is wide variation in the proportion

TABLE IV. AUTOPSIES IN MEDICAL CERTIFICATIONS

Certifier of Cause of Death	Number of Deaths				Per Cent of Deaths			
	Was Autopsy Performed?				Was Autopsy Performed?			
	Total Deaths	Yes	No	Not Stated	Total Deaths	Yes	No	Not Stated
Total	13,866	2,274	8,199	3,393	100.0	16.4	59.1	24.5
Physician	12,141	2,010	7,037	3,094	100.0	16.6	58.0	25.4
Coroner	1,725	264	1,162	299	100.0	15.3	67.3	17.4

TABLE V. AUTOPSY VARIATIONS BY CAUSE OF DEATH

	Number of Deaths				Per Cent Autopsied			
	Was Autopsy Performed?				Was Autopsy Performed?			
	Total	Yes	No	Not Stated	Total	Yes	No	Not Stated
Total	13,866	2,274	8,199	3,393	100.0	16.4	59.1	24.5
Infective and parasitic diseases	220	77	115	28	100.0	35.0	52.3	12.7
Malignant neoplasms (cancer)	2,365	491	1,326	548	100.0	20.8	56.1	23.1
Diabetes mellitus	269	35	159	75	100.0	13.0	59.1	27.9
Intracranial vascular lesions	1,749	136	1,118	495	100.0	7.8	63.9	28.3
Diseases of the heart	4,846	543	3,103	1,200	100.0	11.2	64.0	24.8
Hypertension without mention of heart disease	153	12	95	46	100.0	7.8	62.1	30.1
General arteriosclerosis	321	19	216	86	100.0	5.9	67.3	26.8
Pneumonia (except pneumonia of the newborn)	251	67	133	51	100.0	26.7	53.0	20.3
Diseases of the digestive system	519	198	230	91	100.0	38.2	44.3	17.5
Nephritis and nephrosis	146	24	89	33	100.0	37.9	43.8	18.3
Maternal deaths	18	10	6	2	100.0	55.6	33.3	11.1
Congenital malformations	247	103	80	64	100.0	41.7	32.4	25.9
Birth injuries, postnatal asphyxia and atelectasis	242	63	100	79	100.0	26.0	41.3	32.7
Infections of the newborn	40	6	24	10	100.0	15.0	60.0	25.0
Immaturity	265	38	121	106	100.0	14.3	45.7	40.0
Other diseases peculiar to early infancy	57	19	22	16	100.0	33.3	38.6	28.1
Accident fatalities	1,024	205	628	191	100.0	20.0	61.3	18.7
Suicide	147	8	114	25	100.0	5.4	77.6	17.0
Homicide	11	6	4	1	100.0	54.5	36.4	9.1
All other causes	976	214	516	246	100.0	21.9	52.9	25.2

Summary and Conclusions

1. A query regarding autopsy performed has appeared on Minnesota death records since 1918.

2. The findings of this study indicate that approximately 16 per cent of all Minnesota deaths are autopsied.

3. A large proportion of the autopsies is performed in the metropolitan areas of Minneapolis, Saint Paul, and Duluth.

of autopsies among the various causes of death.

6. There is need for more complete response to the autopsy query on the death certificate. This study indicates that no reply was given on almost 25 per cent of the cases. Physicians are urged to supply this information in the medical portion of the death record. It is a part of the complete medical certification.

HISTOPLASMOSIS AND TUBERCULOSIS

Histoplasmosis must be taken into account in all routine x-ray surveys of population and differentiated from tuberculosis despite superficial similarities. Carefully controlled studies of the etiology of histoplasmosis

in relation to conditions that vary geographically are very much needed.—G. ARNOLD CRONK, M.D., *New York State Journal of Medicine*, August 15, 1951.

President's Letter

THE ODDS ARE TWO TO ONE

The odds are two to one against doctors being good citizens.

If that startles you, consider the fact that only 36 per cent of the nation's physicians discharge one of the basic obligations of citizenship—exercising their right to vote.

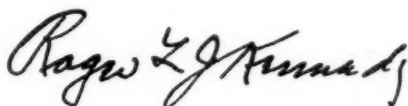
During recent years, the medical profession has made aggressive entry into politics in order to keep politics out of the medical care picture. Physicians have developed an alert, analytical attitude toward legislative proposals and governmental agency functionings which affect the practice of medicine and, by inescapable progression, the health of the nation.

The medical profession has gone a step further than watchfulness and self-appraisal: through a gigantic and interlocking educational program, physicians have sought to inform the general public on these legislative and economic matters, which are of great personal significance by virtue of their impingement upon such individual prerogatives as the right to select and retain a family doctor.

The educational campaign has been as sharply depicted as a blackboard lesson, with emphasis on the economics of medical care, its close correlation, through the principle of free choice and personal initiative, with the entire democratic structure, and the inevitable decline in quality and availability that would result from governmental interference in the present medical care system.

The family doctors of America have become almost expert in legislative symptomatology and the diagnosis of dangerous "fringe" bills that could cause epidemics of sociological ill health.

And yet, we continue to fail in the important—the vital—duty of registering and voting at elections on all governmental unit levels. Thirty-six per cent of the nation's physicians is not a representative number; nor will it be possible for the load of good citizenship to be carried by only one out of every three physicians. Exercising the right to vote for capable and responsible officials helps to make the good doctor a good citizen.



President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor*; GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

THE PRESIDENT'S COMMISSION ON HEALTH NEEDS

PRESIDENT TRUMAN'S appointment on December 29, 1951 of a Commission on the Health Needs of the Nation to "make a critical study of our total health requirements, both immediate and long term and (to) recommend courses of action to meet those needs" immediately raised the question in many minds as to why. Are the health needs of the people today in such a state as to warrant the expenditure of defense funds to carry on an intensive year's study of such a many faceted subject?

When we consider that President Truman's answer to the health needs of the nation has been, in part at least, the socialization of medical care through compulsory government health insurance and that his efforts along this line have not been successful, we are inclined to agree that the placing of a limit of one year on the life of the committee has significance. It certainly will eliminate the question of compulsory government health insurance from the coming presidential election campaign. Is it possible that he prefers to approach that campaign with the issue of the socialization of medical care eliminated? We, for our part, feel that this will be for the best. The socialization of medical care should not be a plank in any political party platform, whereby it might be swept into the economy along with other political issues. However, voters who are opposed to the extension of socialism in government to the inclusion of medical care nevertheless will be mindful of the present administration's stand on this issue.

Dr. Gunderson's declining to serve on the committee was because he believed that its majority membership and objectives indicated it was "an instrument of practical politics." He doubtless knows whereof he speaks. The chairman of the committee, Dr. Paul Magnuson, is a native of Saint Paul, whose abilities as a Chicago surgeon and executive in the Veterans Administration are well known. He stands well in the opinion of the medical world and his remark as quoted

in *Time* (January 14), that we would all be better off if the AMA hierarchy devoted as much time to care of their patients as they do to political maneuvering was unfortunate, to say the least.

That medical care in certain cases may be very costly is universally recognized. This was emphasized as far back as 1929 when the report of the Committee on the Cost of Medical Care was made. The cost of sickness has always been catastrophic in certain instances. That insurance is necessary to protect against today's high cost of sickness is recognized by the profession as well as the public. This is evidenced by the phenomenal increase in the number of hospital and medical insurance policies sold in recent years.

This type of insurance, and not government insurance involving the taking over of the medical care of our citizens, is the answer of the profession as to the present Health Needs of the Nation. These voluntary policies should also, if possible, be written to cover chronic illnesses which can be particularly catastrophic.

The cost of medical care has increased along with every other commodity in recent years. It has not, however, increased more in proportion than other costs. The blame for this cannot be laid at the door of the medical profession but lies more justly with Congress and the administration. Less unnecessary government spending and lower taxes would enable the people to give better care for their medical needs.

NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC.

ONE REASON why life in these United States is on a higher plane than anywhere else in the world is the existence of voluntary organizations like the National Society for Crippled Children and Adults, which are supported for the most part by small contributions of American citizens simply out of a kindly concern for their unfortunate fellow beings. Somehow, a dollar contributed out of kindness of heart seems to

have a greater value than a tax dollar collected involuntarily. For "the gift without the giver is bare." We would regret to see the many activities for the care of the handicapped now being conducted by these national organizations taken over by governmental agencies. As a matter of fact, we resent the encroachment by the government in certain of these fields which are well supported by voluntary contributions.

The National Society for Crippled Children and Adults was founded in 1921. Since 1934, it has conducted each year an Easter Seal appeal for support. This year, between March 13 and April 13, Easter Seals will be sent to 29 million homes, and opportunity will be given to recipients to contribute to the Society's 10 million dollar program.

The National Society has some 2,000 affiliated Easter Seal societies which receive the support of physicians at the local level, whereas the National Society receives the co-operation of liaison officers of the American Medical Association.

The activities of the societies consist largely in the provision of physiotherapy facilities and trained therapists, psychologists, medical social workers and educators to complement the services of the physician.

LIFE MEMBERSHIP IN MEDICAL ORGANIZATIONS

ACCORDING to a provision of the constitution of the Minnesota State Medical Association adopted in 1946, members of component county societies who have been active members for forty years and have attained the age of seventy may apply for *life memberships* through their component county society to the Council of the Association. A life membership entitles the possessor to all the rights and privileges of active membership except subscription to MINNESOTA MEDICINE,* and he is exempt from dues.

To enable a member to take advantage of this active membership without dues the county medical society of which he is a member must also provide for a life membership free from dues and Hennepin County and Ramsey County medical societies have done just that.

*Minnesota State Medical Association By-laws, Sec. 4, last sentence: "The privilege of receiving MINNESOTA MEDICINE shall be extended to life members upon payment of the regular subscription price."

These *life members* are still active members and are counted for determining representation in the AMA House of Delegates.

The AMA membership rules provide that an active member may be excused from the payment of dues when it is deemed advisable by the Board of Trustees, provided that he is partially or wholly excused from the payment of dues by his component society and constituent association.

The opinion, therefore, seems unanimous that a society member who reaches three score years and ten and has been a member for forty years should receive free membership for life in county, state and national medical organizations.

AN EDITOR'S WISH

The following editorial is reprinted verbatim from the *New England Journal of Medicine* (December 20, 1951), as it expresses exactly our wishes.

It has been an old custom with the *Journal* at this season to prepare and release some sort of editorial statement concerning Christmas. This has usually been in the nature of a brief comment on the advantages of good will among men and the desirability of peace on earth. Depending partly on the world conditions that happened to prevail at the moment and partly on the state of mind of the particular editor who was responsible for the release, the tone of the editorial has been (a) hopeful or (b) unhelpful. There is no indication that these efforts, regardless of their literary merit, have as yet made any impression on the global situation.

This year the editors have decided to withhold their annual attempt to promote the goodwill industry and to give a try, instead, to the equally prevalent custom of presenting their own Christmas list and to see what comes of it.

Here is what the editors would like for Christmas—and, indeed, for the whole new year.

They would like to receive a reasonable number of topflight new manuscripts—perhaps 250—from which they could make their choice, containing from 800 to 4,000 words each, decently typed with double or triple spacing (including the case reports, footnotes and references) on a typewriter with a fresh ribbon. They would like to have the references limited to those of real significance, following accurately the style of the *Cumulative Quarterly Index Medicus*. (The only impression that inflated "bibliographies" make is a bad one.)

Needless to say, perhaps, any paper that is fit to be published is written in as good English as the author can muster and is then rewritten at least twice, with a number of words discarded at each writing; for anything that is worth saying at all is usually said twice

(Continued on Page 239)

Medical Economics

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

BRITAIN "IMPROVES" HEALTH SERVICE PLAN

The British Health Service, after a struggling and expensive existence of supplying many people with new teeth and new wigs, has recently submitted itself to a change which has recognized the qualities of "human necessities and human frailties."

An editorial in a recent issue of the Toronto, Canada, *Globe and Mail*, takes a logical point of view, stating:

"In Britain there is all-party agreement on the principle of national health insurance. Debate now centres on the question how to make it work fairly and reasonably. The Conservative Government's decision that small fees will henceforth be charged for various kinds of medical and dental service does not rescind a Socialist policy; nor is it merely a way to save money for the Treasury. *It will improve the health scheme by a recognition of both human necessities and human frailties.*"

The idea that ill health and illness are only hard luck and that the individual in a good society should not have to pay their penalty, was manifested to the fullest extent in the Socialist Government's 1948 health law. Anybody could get, free of charge, whatever medical, surgical, dental and hospital care he needed simply by paying a weekly contribution to a national fund. This, however, has proved impractical. The *Globe and Mail* points out:

"This is a fine plan on paper but even the Socialists were compelled to admit that it didn't work in practice. Human nature, it was found, does not stand up to the enticements of a health service that is 100 per cent gratis, not even British human nature which is notable for common sense and moderation. When medical advice is to be had for the asking and everything from headache pills to toupees is buckshee, people feel ill oftener than they should and fill up their medicine cabinets with all sorts of superfluous bottles and appliances."

Danger of Decline

Not only did the British health service cost over one-third more than the original estimate for a year, but, according to the paper, "there was a decline or at least the danger of a decline, in the standards of professional health service because people with nothing wrong with them were crowding into doctors' offices, wasting their time and obliging them to scamp the attention they could give each patient."

The changes in the plan are only a modifying policy. There is to be a maximum charge for dental services of one pound, with the state paying the remainder if it is larger, and the patient paying the entire amount if it is smaller. There will be slightly higher charges for private hospital beds, surgical aids and medicines. "These revisions do not alter the basis or framework of health insurance," the Canadian paper states. "They merely make the structure less topheavy."

The editorial concludes that the British government:

"... is saying in effect that illness is not entirely hard luck. The individual has a duty to look after his teeth and his general health. If he fails, he ought to pay at least a small fraction of the expense of putting him right in addition to the regular contribution which only partly covers the cost of insuring him. ... There is an advance here toward realism as well as toward justice and economy."

NATIONAL FIRM PRAISES DOCTORS

A two-page advertisement for a national automotive concern, seen lately in many national magazines, pays tribute to medical progress by a comparison of transportation facilities in the early 1900's and now.

Under a picture of a doctor in his horse-drawn buggy, is this statement:

"The oldtime doctor fought disease and ignorance and dirt—and spent his nights on the country roads, going lickety-split to the patient, and at a drowsy jog

MEDICAL ECONOMICS

on the way home." Over a picture of today's doctor arriving in a car at the patient's home, is this statement: "Today's patient can be reached swiftly: the American Road brings the doctor to every door in the land. To be an American is to be within reach of the miracles of medicine."

Bringing in the development of the automobile as a great step in aiding American progress, the advertisement traces statistics on automobile ownership and their relation to health progress in America:

"Today nearly every one of the 200,000 U. S. physicians uses the automobile and thousands of visiting nurses depend on the car. More than 28,000 motor ambulances stand ready to bring patients to our 6,430 hospitals.

"There are 50 per cent more hospitals now than at the turn of the century, and hospital-bed capacity has more than tripled. Almost every automobile is an ambulance at some time, it seems, taking the doctor to you, or you to the doctor."

PR PROGRAM GAINS MOMENTUM

The stepped-up public relations program of the American Medical Association, as described by Leo E. Brown, director of the Department of Public Relations, "logically divides itself into two phases: internal and external. The internal phase is concerned primarily with relationships between the AMA and other medical organizations and between the AMA and the individual physician. The external phase is concerned primarily with the attitudes of the public toward the medical profession, either as individuals or as groups."

Speaking at the December public relations conference in Los Angeles, Mr. Brown outlined the following general public relations objectives for the coming year:

"1. To gain public support for the American Medical Association by informing the people of the policies, objectives, and accomplishments of the Association.

"2. To strengthen the support of members for the American Medical Association by making known to them the objectives, accomplishments, and services of their Association.

"3. To improve physician-patient relationships by encouraging the physician to administer his services promptly, efficiently, and courteously, with understanding of the patient as an individual, and in line with the first sentence of the Principles of Medical Ethics: 'The prime object of the medical profession is to render service to humanity . . .'

"4. To encourage our constituent state and county medical societies similarly to continue and expand their own public relations activities, thereby cementing physician-patient and community relationships at the grass roots.

"5. To work toward the solving of the economic problems arising from the cost of illness."

Mr. Brown pledged the department's constant work to attain these goals through the many public relations media at its disposal. He listed the use of weekly news releases, new and improved brochures, reprints from popular magazines, publicity service for the many councils, bureaus and committees of the organization, radio, television, and film activities, an expanded information service to magazine editors and free lance writers. Also, the department proposed to "(1) continue the promotion of impartial 'grievance committees'; (2) continue the promotion of twenty-four-hour emergency call services; (3) to encourage the physicians to police their own ranks and take disciplinary action against members guilty of unprofessional and unethical conduct; (4) become civic-minded, active in worthy community affairs, and publicly stand for high morals in government; and (5) encourage our state and county medical societies to support and promote other Association activities, such as school health, civil defense, and rural health, as an integral part of their own PR program."

Praises State Work

Concluding his remarks, Mr. Brown put in a word of praise for the excellent work done by state and county medical societies in this field:

"The co-operation we have received from our state and county medical societies has been excellent, and I want you to know it is appreciated. You have joined forces with us, and I trust we can continue to pull together.

"We have made mistakes during the past year—we will make some during the coming year. There are many things to be done, goals to be achieved, but we are moving ahead and, with your help, will continue to progress."

COUNTY SOCIETY STARTS EFFECTIVE PLAN

In answer to the proponents of socialized medicine who say that there are hundreds of individuals going without medical care who would be guaranteed it under their plan, one county medical

society has countered with its own guarantee: to supply medical care for all who cannot afford it. The original vote of the medical society obligates every member to accept a reasonable number of cases.

When the plan was first inaugurated, skeptics were quick to say that it was a publicity gimmick and that it was not on the level. But such is not the case, according to the society's executive secretary, for the plan was genuine and set in a firm foundation. The offer is still good after five years and many other counties have tried and found this same type of program successful.

The proof came in the actual working out of the program. In six months after the first advertisement announcing the plan, there had been only fifty-nine calls altogether. The executive secretary stated:

"When we come face to face with some of the 'dogooders' who tell us there are dozens of persons in this town going without medical care, we are able to say, 'That is interesting to us; would you get us the name of the first lady you would like to have taken care of in the group you are talking about?' In one instance, we needed a small group for three weeks trying to get the name of the first person they were talking about. It is surprising but very pleasing to see the reactions when we follow up on the false claim that there are hundreds of persons going without care. At the same time, it is a great source of satisfaction when you find someone who really needs it, who is going without it, simply because he just does not know where or how to find the physician who will be willing to take care of him without charge."

Summing up the obvious public relations value of such a program, he said:

"Our doctors are not operating the jackpot I referred to earlier. They are just being good doctors and good neighbors. We believe that medical public relations are better in those local counties where the guaranteed medical-care-for-all plan exists, because in those counties the ethical physician, who will abide by the solemn promise never to turn his back on human suffering because he might not get paid, is not a mythical character. He is not someone whose name can't be remembered in times of sickness or apparent need. He is easy to find, because he is the total local medical profession. He is the county medical society."

It is rare, indeed, to see an American child with a hunchback as a result of infection with bovine tuberculosis. Virtual eradication of this disease in cattle has nearly eliminated one very important source of infection in children and in adults who might be exposed to the infection through direct contact or consumption of milk from tuberculous cattle.—C. H. PALS, D.V.M., *Am. J. Pub. Health*, September, 1951.

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THE HYPERSPLENIC STATE

(Continued from Page 224)

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AN EDITOR'S WISH

(Continued from Page 236)

as well in half the number of words. Its tables and charts are few and simple and properly captioned. In its final state it is crystal clear and informative and meets some need other than that of the author for publicity.

After all, the only really valid reason for writing a scientific medical article is to present the results of useful investigation or seasoned experience, thus adding to the sum of medical knowledge, or to bring together and correlate existing knowledge in order to make it more easily available. Only occasionally is a single case worth reporting, to remind a journal's readers of the existence of some condition that may cause diagnostic confusion or to add to the knowledge of its treatment; it should be reported with the utmost brevity. A case report should always point a moral, whether or not it may adorn a tale.

The editors would like to find in their stockings the promise of a series of inspired and carefully worded editorials on a variety of pertinent subjects and a salty but amiable correspondence suitable for publication. They would be pleased with a strict observance of deadlines on all promised material.

Given these things, a circulation that continues to expand, and a growing list of contented advertisers, they will believe that there really is a Santa Claus!

Minnesota Academy of Medicine

Meeting of May 9, 1951

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 9, 1951. Dinner was served at 7 o'clock and the meeting was called to order at 8:10 p.m. by the President, Dr. W. H. Hengstler.

There were forty-eight members and eight guests present.

Minutes of the April meeting were read by Dr. Charles Rea, in the absence of the secretary. They were approved as read.

Dr. A. E. Benjamin read the following Memorial to Dr. H. B. Sweetser, Sr., and a motion was carried that it be spread on the minutes and a copy sent to the family.

HORATIO B. SWEETSER 1861-1950

Dr. Horatio B. Sweetser, of 2509 Pillsbury Avenue, Minneapolis, died May 23, 1950, at the age of eighty-eight. He was born in Brooklyn, New York, July 13, 1861. Doctor Sweetser was graduated from St. John's College in the city of his birth in 1877, receiving his medical degree from the College of Physicians and Surgeons in New York City in 1885. A period of internship was served in St. Francis Hospital of New York from 1885 to 1886. Doctor Sweetser engaged briefly in the practice of medicine in New York before journeying to Minneapolis in 1887.

Doctor Sweetser served as professor of anatomy and surgery at Hamline University in Saint Paul and in a similar capacity at the University of Minnesota Medical School following a merger of these two medical departments.

Doctor Sweetser was a charter member of St. Mary's Hospital of Minneapolis. His affiliation with this hospital coincided with his arrival in this community in 1887, and for many years he ably served as Chief of Staff at St. Mary's.

Doctor Sweetser was a member of the American College of Surgeons, the Western Surgical Association, the Minnesota Academy of Medicine, over which he presided in 1919, the Minneapolis Surgical Society of which he was president in 1927, the Hennepin County Medical Society, whose activities he directed in 1899-1900, the Minnesota State Medical Association and the American Medical Association.

Doctor Sweetser was a member of Phi Rho Sigma, undergraduate medical fraternity, the Minneapolis Athletic Club, the Minneapolis Automobile Club, and the Bloomington Golf Club.

The family name will continue to be ably associated with medicine through the two sons who survive him, Theodore H. Sweetser, M.D., and Horatio B. Sweetser, Jr., M.D. There are two daughters, Mrs. Frank Preston of Minneapolis, and Mrs. Elizabeth Albrecht, of

Belle Plaine. Doctor Sweetser's wife preceded him in death in 1936.

Doctor Sweetser was a dynamic person. He was a good clinician and surgeon, a keen observer, and a conscientious practitioner. He had the confidence of his patients and the esteem of his confreres.

We all admired his analytical mind and deep convictions. He was a good debater and loved to match his wits on any debatable question with his colleagues. His arguments carried weight in committee and general meetings of the organizations to which he belonged. He was a faithful attendant at the meetings of the Academy.

His patients were well served by his skills and accomplishments.

Dr. E. T. Evans read the following Memorial to Dr. Vernon L. Hart.

VERNON L. HART 1898-1950

Vernon L. Hart was born on October 24, 1898, in Huron, Ohio. He received his medical education at the University of Michigan where he was graduated in 1924. From 1924 to 1932, he served on the surgery and orthopedic services at Ann Arbor. He served as Head of the Department of Orthopedics prior to establishing private practice in Dayton, Ohio, from 1932 to 1933.

In the fall of 1933, he established residence in Minneapolis, taking over the practice of the late Dr. Emil Geist, maintaining that high quality of practice initiated by Doctor Geist.

He was a Fellow of the American College of Surgeons and a Diplomate of the American Board of Orthopedic Surgeons. He was a Fellow of the American Academy of Orthopedic Surgeons and a member of the Clinical Orthopedic Society. He was, of course, a member of the American Medical Association and of the State and County Medical Societies. We remember him best as a member of this Academy.

He enjoyed an enviable reputation based upon meticulous attention to detail and a keen appreciation of the fact orthopedic disabilities are frequently major disasters in the life of the patient. Because of this he was beloved by his patients and respected by his colleagues. He was a member of the active staffs of Swedish, St. Barnabas, Abbott and St. Mary's Hospitals. He remained active in teaching in association with the University Hospital group.

I have mentioned his attention to detail. He carried this into every effort of his professional career and it was reflected in numerous contributions to orthopedic literature in which he insisted upon carrying out a logical and orderly procedure. He will long be remembered

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for his classical contribution to early diagnosis and evaluation of dysplasia of the hip and its relation to congenital dislocation of the hip.

He entered Service in World War II as a Major of the Army Medical Corps on May 12, 1941, and served with distinction until his separation from Service on April 1, 1946, with the rank of Lieutenant Colonel, at which time he was Orthopedic Consultant to the 5th Army Area.

He was a member of the National Research Council and in 1948 he served as a civilian consultant to the Surgeon General United States Army, inspecting the American Zone in Germany.

He had a host of friends, professional and non-professional, to whom his untimely death on July 12, 1950, came as a great shock.

The community, and the orthopedic profession especially, joins in tribute to a real gentleman, a fine teacher, and a talented surgeon. It extends its sympathy to his wife, Ruth, and daughter Louisa K., who, in their bereavement, are sustained with pride in his achievements.

A motion was carried that this memorial be spread on the minutes of the Academy and a copy sent to Doctor Hart's family.

The chairman of the Program Committee discussed programs for the future, for consideration by the members prior to discussion at a future meeting.

The scientific program followed.

PLASTIC OPERATIONS FOR HYDRONEPHROSIS

With Particular Reference to the Foley Y-plasty

FREDERIC E. B. FOLEY, M.D.

Saint Paul, Minnesota

(This paper will appear in a later issue of MINNESOTA MEDICINE)

ROENTGENOLOGIC DIAGNOSIS OF BENIGN GASTRIC ULCER

A Preliminary Report of 133 Cases*

C. J. CORRIGAN, M.D. and HAROLD O. PETERSON, M.D.

(Abstract of presentation with numerous lantern slides by Dr. Peterson)

What is the incidence of malignancy in gastric ulcers which appear benign roentgenologically? That is the question which prompted the present study. The impression gained from the literature is that 10 to 30 per cent of gastric ulcers are malignant depending on their location. Ulcers on the greater curvature are considered to be 100 per cent malignant. There is one serious criticism of all the statistics of this type, namely, that they include only operated cases or cases studied postmortem. This represents a select group and does not include all the people who have gastric ulcers and never come to surgery or autopsy. A group which would include all gastric ulcers with or without surgical treatment would obviously be a more accurate representation. Unfortunately such a group would lack histological verification in a high percentage and one would have to depend on the clinical and roentgenological course for the final diagnosis.

Because we could not recall a single case of benign gastric ulcer being later proved to be malignant we decided to make an accurate investigation of our cases. All the patients who had had a diagnosis of benign gastric ulcer roentgenologically during the past 11 years were included in this study. To this group were added

all the cases in which a benign ulcer was found in the surgical or autopsy specimen even though the roentgen diagnosis had been indeterminate or suggested carcinoma. All of the patients had been examined either at the Miller Hospital in Saint Paul or the Interstate Clinic in Red Wing, Minnesota.

Over an eleven-year period, 133 cases of gastric ulcer were collected and an attempt was made to obtain follow-up information on all of them. Seven of these were diagnosed roentgenologically as being carcinoma or probable carcinoma and all proved to be benign histologically. The remaining one hundred and twenty-six were called benign roentgenologically. Fourteen of these had histologic studies and three carcinomas were found. In one of these three cases postmortem studies cast some doubt as to whether the carcinoma actually arose in the stomach. The second case was a huge carcinoma of the stomach and should have been diagnosed as such roentgenologically and is therefore an error in judgment which should not have been made. The third carcinoma was superficial in type involving only the mucosa in a small zone around the ulcer with no tumor cells in the ulcer itself. Hebbel believes these cases are primary superficial carcinomas of the stomach with secondary ulceration. They cannot be distinguished roentgenologically from a benign ulcer.

Five other cases were operated upon but no specimens obtained. Four of the five had gastro-enterostomy.

*Since this presentation, fifteen more cases have been added to the original 118 and have been included in the summary to bring the total to 133 cases.

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TABLE I.
CASES WITH LESS THAN 1-YEAR FOLLOW-UP

Healed by X-ray Examination	15
Not healed	8
Improved	9
No follow-up	6
Dead (1 Ht. disease; 1 hemorrhage from BGU)	2
Total	40

mies and the fifth case required surgery to close a perforation. To summarize the twenty-six surgical and autopsy cases, nineteen had gastric resections, four gastroenterostomies, one closure of perforation, one exploration followed by autopsy, and one autopsy after terminal hemorrhage.

The remaining 107 cases had a clinical follow-up with or without repeated roentgen examinations as shown in Tables I and II.

There were thirteen deaths in the entire group, of which six were not related to the gastric ulcer and seven were related. Of the seven deaths related to the ulcer three occurred in the immediate postoperative period and a fourth postoperative death followed a third operation necessitated by complications from the gastric resection. Two medical deaths followed gastric hemorrhage and one patient died as a result of obstruction from an hour-glass stomach at the age of eighty-six.

The ulcers were located as follows: forty-three in the prepyloric area all benign; eighty-eight on the lesser curvature above the prepyloric area with three carcinomas; and two on the greater curvature both benign. The size of the ulcer had no significant relationship to the incidence of malignancy.

Only thirty cases had gastric analysis and many of these were done with alcohol and not histamine. Most of these had free hydrochloric acid values of less than 30° and some were achlorhydric.

Conclusions

1. Three known carcinomas were found in 133 cases of gastric ulcer.
2. The size and location of the gastric ulcer is of no diagnostic aid in the differentiation of benign or malignant ulcers.
3. Achlorhydria is of no value in the differential diagnosis of benign gastric ulcers.
4. Superficial carcinoma of the stomach with ulceration cannot be distinguished from benign gastric ulcers. This is a very rare type of ulcer.
5. No case of gastric ulcer should be dismissed until the ulcer has either healed and remains healed for a reasonable time or a resection has been done.

References

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TABLE II.
CASES WITH MORE THAN 1-YEAR FOLLOW-UP

Years Follow-up	Well	Not Well	Dead	Total
1-2	11		1	12
2-3	9		1	10
3-4	6		1	7
4-5	9		1	10
5-6	8		1	11
6-7	4	2		5
7-8	1	1	1	2
8-9	4		1	5
9-10	1			1
10-	4			4
Total	57	3	7	67

of malignancy in prepyloric ulcers. *JAMA*, 120:733-735, 1942.

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Discussion

DR. L. G. RIGLER, University of Minnesota. This is a very interesting paper to me because we have gone through a great many evaluations on this subject. A great many years ago, L. G. Cole said he thought there were many cases in which he could establish a diagnosis. He thought that in about 90 per cent one could say with great certainty that an ulcer is benign or malignant, and in 10 per cent no distinction could be made. I used to think that, but in later years I have learned from sad experiences that this is an optimistic view. I think we at the University Hospital have a rather unsatisfactory experience as we don't see the ordinary garden type of case. I don't think I would have disagreed with any but one of those Dr. Peterson presented. The cases we see are much more irregular and I suppose that is natural. We have a conference with the surgeons each week, and all the material of the week is then exhibited; we then try to make a statement as to what it is. We have had the experience of having the surgical pathologist and the surgeon with the specimen in front of them still uncertain; sometimes they are 100 per cent wrong as to what it is. It certainly is true that in a few cases, a small very benign looking ulcer proves to be a carcinoma. The unfortunate thing is that one is not always sure as to which we are dealing with. I do think one has to bear in mind the kind of material one is dealing with—whether it is the ordinary material that comes into a clinic, for instance, or those we see which give a lot more trouble.

DR. O. H. WANGENSTEEN, University of Minnesota: This recital of Dr. Peterson's experience has been impressive. However, I am inclined to agree with Dr. Rigler that when Dr. Peterson has all the reports in on his cases, he may find his present judgment tempered by a more complete evaluation of his own experience. There are no Delphic Oracles in Medicine. Even the pathologist, with the excised lesion in his mind, finds it necessary quite often to await the verdict of the microscope before giving his opinion with reference to the important question of whether an ulcerative gastric lesion is a benign ulcer or a cancer. And every now and then, the pathologist finds it necessary to reverse himself. The circumstances are usually these. A large craterous gastric ulcer has failed to heal completely under medical management. The pathologist, when he has examined many sections cut from several areas in the ulcer gives the verdict of a benign ulcer. A year or two goes by, and the patient feels well. Then presently,

his health begins to fail. He comes back looking like a scarecrow. His neighbors know that the patient had an operation upon his stomach. They know now that he had cancer. They believe, the patient has a recurrence. Moreover, they are probably right. The surgeon has the pathologist look at the patient. The gross specimen is resurrected; many more sections are cut. And the cancer is found. I have had this experience several times. It concerns almost invariably a large ulcer. Certainly not every large ulcer is a cancer. Nevertheless, such large ulcers should be suspect.

Determination of gastric acidity is important. The incidence of achlorhydria or hypochlorhydria in gastric cancer is frequent. To be certain, there are patients with gastric cancer who have free HCl in the gastric contents; however, such patients are in the minority. It is amazing how frequently physicians omit performance of gastric aspiration to determine gastric acidity. In the Cancer Detection Center, asymptomatic patients, who are found to be achlorhydric to histamine, are subjected to x-ray examinations of their stomachs. During the past year, I have seen three achlorhydric patients, who, at operation were found to have gastric cancer. All three had been treated as having peptic ulcer on the basis of x-ray evidence, without having had the gastric contents assayed for free HCl. One of them had been gatroscoped several times!

As Dr. Rigler intimated, Cole of New York City was in part responsible for the veering about in attitude toward a more conservative treatment of gastric ulcer. Here in the mid-west, Wilson, MacCarthy and Carman of the Mayo Clinic, as well as William J. Mayo and C. H. Mayo were supporting the thesis that a benign gastric ulcer may become transformed into a cancer. Some of that discussion generated more heat than light. Certainly, it should be said now, that whereas the danger of malignant transformation probably was not as great as some of the men of the Mayo Clinic of that day believed it to be, nevertheless, when the problem is reviewed in the aggregate, bearing in mind all the practical implications, the men of the Mayo Clinic held, for that day, what today might be called a very modern view.

All the evidence points directly toward the necessity of viewing the persistent gastric defect with suspicion. We would all agree with Dr. Peterson that the garden-variety of ulcer occurring typically on the lesser curvature just above the infundibulum which disappears completely under medical management—such an ulcer need not be suspect for cancer. It may come back nevertheless in the very same area after the elapse of some months, with reassertion of clinical symptoms. In thirteen patients in our Clinic with x-ray defects on the lesser curvature, which healed out completely, adjudged from disappearance of a defect detectable by x-ray examination, gastric resection was carried out anyway. One of the thirteen had a cancer. In only one of the remaining twelve was the defect completely covered with epithelium. In all instances, peninsulas of epithelium went out from the edges of the ulcer, but in most of the instances, these bridges of epithelium did not cover the defect completely. I regard this microscopic study of apparently healed gastric ulcers as important. These observations of my surgical colleagues, Drs. Henri, Sanchez, Lyle Tongen and Stanley Friesen have not been published yet. They do indicate however why the ulcer frequently comes back in the very same spot. The ulcer probably failed to heal completely in the first instance leaving an area unprotected by normal gastric epithelium.

The important bits of evidence however which confront anyone who takes the point of view with reference to diagnostic accuracy in differentiating whether a persistent gastric defect is a benign ulcer or a cancer by any means other than microscopic verification are the reported findings of pathologists upon the histology of allegedly benign gastric ulcers removed by surgeons. In

the experience of the Lahey Clinic (1948) this figure is 18 per cent; at the Massachusetts General Hospital it is 14 per cent; for our own Clinic it is a little more than 10 per cent. If one affects the role of a prophet in this difficult task of deciding, in certain persistent defects, whether a lesion is benign or malignant, his prophecies may boomerang upon him.

Whereas, striving for perfection is a laudable, if unattainable, objective in many spheres of our activity, we may justify the censure of our colleagues or society if in striving for such perfection, we assume risks for our patients which experience suggests we are not warranted in taking. There are times when we must ask ourselves: What is the important consideration here? Is there a good chance that I may be wrong? Yes, we are all human and very fallible. Long years ago, my colleague, Dr. Rigler began including in his report in questionable situations the following statement: "The presence of cancer cannot be excluded." That statement serves to alert the clinician to the potential serious import of the condition. It has had, in most instances, a very salutary effect upon the physician. It puts the responsibility where it belongs. What if the roentgenologist said I believe the lesion is benign and advise a period of conservative management. Why should he assume this responsibility? Here striving for academic perfection is a disservice to the patient and those responsible for his care. I feel that Dr. Rigler should be commended for his frankness and his sincerity. That view is synonymous with alertness in the early detection of gastric cancer.

DR. L. A. NASH, Saint Paul (by invitation): Since I am a guest of the Society and also an associate of the speaker, I hesitate to raise my voice. I do not believe that on radiological criteria alone, most of us can be as sure of ourselves in this matter of separating cancer ulcers from benign ones as Dr. Peterson appears to be. As a radiologist, I have been accused of playing into the hands of the surgeons in favoring early resection of gastric ulcers, basing my thinking on the idea that cancer must be removed early to be cured. The errors we make are greater in each group of cases than the current operative mortality. However, with improved apparatus and increased knowledge, there is growing evidence that the differentiation can be made more often and I think Dr. Peterson has indicated that tonight. On the other hand, I must agree with Dr. Wangenstein and will wait with interest a second hundred cases to be reported by Dr. Peterson to see if the diagnostic error does not approach the "standard error of diagnosis" occurring in other documented analyses.

DR. PETERSON, in closing: I wish to thank the discussors for their frank remarks. I expected considerable criticism of this paper since it presents a viewpoint directly opposite to the prevailing opinion of most surgeons and many radiologists. Before looking up our cases of gastric ulcer, I had the impression there would be very few, if any, ulcers which were diagnosed as benign that proved to be malignant. Until two weeks ago we had not uncovered a single proven carcinoma; but, in reviewing the earliest patients who were examined and operated on ten years ago, we discovered two malignancies. This low incidence of malignancy (two in 118 cases) substantiates my impression. I believe the chief reason for the scarcity of carcinoma in this group of ulcers is the fact that these cases represent the typical clinical type of gastric ulcer observed by the average physician in private practice. The group is not limited to people who have had resections, especially in the larger centers, but include every one with an ulcer demonstrable on roentgen examination whom we have studied during the last ten-year period. The lack of histologic proof on most of these cases can be criticized but

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Minneapolis Surgical Society

Meeting of May 3, 1951

The President, HARVEY NELSON, M.D., in the Chair

SURGERY OF TUMORS AND HYPERFUNCTIONING STATES OF THE ADRENAL GLANDS

DAVID STATE, M.D.
Minneapolis, Minnesota

The striking clinical picture which accompanies derangements of the adrenal glands has made these conditions a most interesting subject for study. The purpose of this paper is to present the examples of the more common derangements of the adrenal glands seen and treated at the University Hospitals from 1941 to 1951.

Embryology

The medulla is derived from the embryonic neural crest and thus has a common origin with the sympathetic ganglia. The cells are further differentiated into nerve cells and chromaffin cells, the latter taking a characteristic brown color with chromic acid stain.

The cortex arises from the celomic epithelium near the origin of the germinal epithelium of the sex glands.

The adrenal is largest at birth with the major portion of the gland being composed of adrenal cortex. The latter is divided into large inner androgenic or "X" zone and a thin outer layer of cortical cells similar to that observed in later life. The reduction in size of the adrenal cortex after birth is due to the rapid degeneration of the "X" zone and the true cortex which is left behind, continues to grow and develop. Adrenal cortical cells grow continuously from without in, that is, cells arise from the spindle shaped cells under the fibrous capsule and pass inward to form the three zones; the zona glomerulosa, the zona fasciculata and zona reticularis.

Physiology

Adrenal Medulla.—Adrenalin is apparently formed from the chromaffin cells. The release of adrenalin is largely an emergency function and as is well known, causes vascular constriction, dilatation of the coronaries, increased contractility of the heart, etc. The adrenal medulla, however, is not absolutely essential for life.

Adrenal Cortex.—Hormones elaborated here manifest the following distinct metabolic activity: (1) maintenance of the electrolyte and water balance, (2) influence on carbohydrate metabolism and (3) augmentation of protein anabolism.

Inaugural report presented before the Minneapolis Surgical Society, May 3, 1951. Studies herein reported were supported by grants from (1) Graduate School, University of Minnesota, (2) Malignant Disease Research Fund, and (3) Flora L. Rosenblatt Fund.

The importance of the adrenal cortex is related to various stresses such as burns, trauma, fatigue, etc., has been recently emphasized by Selye. How the adrenal cortex helps in homeostasis is not entirely clear. The cortex is essential for life.

Diseases of the Adrenal Glands

Tumors of the Adrenal Medulla

Neuroblastoma.—These tumors arise from the nerve cells of the medulla and depending upon the stage of development of the cells at the time of neoplasm formation, the tumor has a varied malignancy. The neuroblastoma is by far the most common and it is the most common neoplasm of the abdominal cavity in children under the age of four. Clinically these tumors are small and encapsulated early but they are soon capable of invasion of the adjacent organs such as, kidney, mesentery, vertebra, pancreas, etc. Metastases also occur readily both by lymphatic and blood streams with the lung, liver, brain and skeletal system most often being involved. The patient most frequently complains of vague symptoms such as, weakness, easy fatigability, loss of appetite and pain in the back. Examination reveals, usually, an enlarged abdominal mass. Treatment, ideally consists of excision of the tumor but because of the rapid growth this is rarely possible. Roentgen therapy should be given even though metastases may be present. Farber has seven patients out of thirty-two who have survived two or more years following either complete surgical removal or x-ray therapy. Two of these patients had liver metastases.

Pheochromocytoma.—This neoplasm arises from the chromaffin cells of the adrenal medulla and produces symptoms characteristic of those due to release of adrenalin into the blood stream. One, therefore, sees arterial hypertension, tachycardia, nausea, vomiting and sweating. Green has shown that symptoms may be chronic or persistent as well as intermittent. Diagnosis may be assured by the use of a sympatholytic drug such as, dibenamine or benzodiazine which cause a fall in blood pressure if the hypertension is due to pheochromocytoma.

From a surgical point of view, the major problems in handling cases of pheochromocytoma are those related

to the marked elevation of blood pressure associated with manipulation of the tumor during operation and the precipitous fall following removal of the tumor. In order to combat the former, a short acting drug such as benzodiazine or amyl nitrate by inhalation may be used. To counteract the marked fall in blood pressure which occurs after removal of tumor the following points are important. (1) Epinephrine in 1/100,000 solution, whole blood, and adrenal cortical extract should be available before operation is started. An "intravenous" with a large bore (No. 15) needle should be inserted before operation is started. (2) Wide exposure of the adrenal should be obtained so that manipulation is reduced to a minimum and the vascular supply to the gland is made available for clamping. The trans-abdominal approach is excellent in this regard. (3) Before removal of the tumor, the pedicle should be clamped and released repeatedly with the period of occlusion gradually increased until the pressure remains stable after a period of ten minutes of pedicle clamping. (4) If a precipitous drop of blood pressure occurs the epinephrine solution and whole blood should be given quickly and in sufficient quantities to bring back the blood pressure to normal levels. Adrenal cortical extract in doses of 10 cc. intravenously should also be given. Postoperatively, the patient should be watched carefully for delayed drops of blood pressure.

The mortality rate continues, however, to be high and the longer the duration of the disease the higher the mortality. In children, to date, the death rate in the operation has been very high, about 58 per cent.

Diseases of the Adrenal Cortex

Hyperadrenocorticism.—Nearly all cases may be divided on the basis of their predominating metabolic manifestations into two groups: (1) Adrenogenital syndrome and (2) Cushing's syndrome.

1. Adrenogenital Syndrome

(a) *Congenital adrenal hyperplasia in the female.*—This is the most common adrenal disorder encountered in children. At birth these children have an enlarged clitoris which is bound ventrally by a fibrous cord. The labia majora are hypertrophied while the labia minora are underdeveloped. There is a single urogenital sinus which gives a common opening for the urethra as well as the vagina. Uterus, ovaries and Fallopian tubes are present. From birth on there is rapid somatic growth, sexual hair growth, muscular development and epiphyseal ossification. The voice becomes deep and the excretion of 17 ketosteroids is always increased in relation to the patient's age.

Pathology.—Both adrenals are usually enlarged to about one and one-half to three times normal size. Occasionally the hyperplasia appears to be unilateral. Microscopically the glands are composed largely of polyhedral granular cells similar to those of the foetal androgenic or "X" zone.

Differential diagnosis.—The condition must be distinguished from (1) intersexuality or hermaphroditism,

(2) postnatal virilization and (3) sexual precocity of the iso-sexual type. Differentiation from these conditions is made upon the fact that from birth on the clitoris is enlarged and there is urogenital sinus for a common opening for urethra and vagina. These other conditions that may simulate pseudohermaphroditism of the female but they do not have a urogenital sinus.

Treatment.—This is a complex and difficult task. Unfortunately, the removal of one adrenal or portions of both adrenal glands has resulted in no significant change in the clinical course. Recently Wilkins has called attention to the fact that cortisone may possibly repress excessive androgenic function and this is worthy of trial to prevent progressive virilization in selective cases. If the diagnosis is made early in childhood it may be well to raise the child as a girl and to this end the clitoris may be amputated. At the time of puberty attempts at increasing femininity may be made by using estrogenic hormones. Where the patient has been raised as a boy it is best to pursue this path for at puberty there is excessive androgenic activity. The chordee may be corrected and plastic procedures to form a penile urethra may be carried out.

(b) *Adrenal hyperplasia in males (macrogenitosomia praecox).*—In this condition the penis is usually enlarged at birth but this may not occur until the child has reached one and one-half to two years of age. The voice becomes deep and other evidences of secondary sex characteristics such as, hair on the pubes and in the axillae and on the face, also develop early. The excretion of 17 keto-steroids is markedly increased but the testes characteristically remain small and immature. This latter point is of extreme importance in the differential diagnosis of this condition from other endocrine disturbances which may give a similar clinical picture. Although somatic growth is rapid at first, epiphyseal fusion occurs early so that by the tenth year growth is completed and the patient remains a short adult with broad shoulders and powerful muscles.

Treatment.—There is no effective way of inhibiting the excessive production of adrenal androgens but in the male the outlook is much happier than in the female with congenital hyperplasia because the patient ends up with masculine features although he is short and stocky. It may also be possible to delay early epiphyseal fusion in certain cases by the use of cortisone. As in the female patient, special attention must be paid to the psychotherapy of the individual so that he can be eased into his environment with the greatest facility.

(c) *Virilizing tumors in females.*—Excessive androgenic activity of the tumor is characterized by the rapid growth of the clitoris, appearance of pubic and axillary hair, deepening of the voice and the onset of seborrhea and acne. Unlike the patient with congenital hyperplasia of the adrenal, however, the external genitalia are normally formed. The 17 keto-steroid excretion is increased and the beta fraction may also be increased. These neoplasms are prone to be malignant and may metastasize

early to lung or bone or to the liver. Treatment consists of removal of the adrenal tumor. If therapy is successful there is reversion of the patient to a normal female appearance. In addition the excretion of 17 keto-steroids is repressed to normal levels and remain so if there are no evidences of recurrences.

(2) *Cushing's Syndrome*.—This syndrome is characterized by increasing obesity of the "buffalo" variety, that is, deposition of fat about the shoulders and face, weakness, purple striae of the abdomen, increased capillary fragility, osteoporosis, hypertension, virilization of the female, diabetic blood sugar curve, increase in serum sodium and decrease in serum potassium. There is an increase in the urinary excretion of 11 oxysteroids and 17 keto-steroids. In children there are evidences of sexual precocity but not as marked as in congenital hyperplasia.

Pathogenesis.—Thompson and Eisenhardt studied ninety-eight cases that came to autopsy and showed that basophil adenoma of the pituitary is found in approximately 60 per cent and adrenal tumors in 22 per cent. It is generally agreed that the symptoms of Cushing's syndrome with or without pituitary tumors are due to excessive production of the hormones of the adrenal cortex. Wilkins states that all cases of Cushing's syndrome beginning before the age of eleven years are due to adrenal tumors.

Treatment.—When the Cushing's syndrome is due to adrenal tumor its removal results in reversion to normal on the part of the patient. When adrenal hyperplasia occurs the treatment of Cushing's syndrome is usually unsatisfactory. Radiation of the pituitary and the use of testosterone and estrogens to combat osteoporosis has been advocated. From a surgical point of view, removal of one adrenal gland usually results in little change though we have encountered one patient who had excellent results following unilateral adrenalectomy and the group at the Mayo Clinic have performed bilateral subtotal adrenalectomy in three patients with appreciable improvement.

General Comments Concerning Localization and Removal of Adrenal Cortical Tumors

Localization may be difficult when the tumor is not palpable. A flat plate of the abdomen may show calcification and planograms are helpful and should be done in all cases. Pyelograms may show abnormal displacement of one kidney by an overlying mass. Cahill advocated perirenal air insufflation but this is not without danger and results are frequently inconclusive. Whenever clinical and laboratory findings are sufficient to suggest an adrenal tumor, provided the patient is in the best possible shape, laparotomy should be carried out.

The preoperative preparation of the patient is extremely important and laboratory tests such as the eosinophil count, electrolyte pattern and diuresis test of Robinson-Power and Kepler should be carried out in order to determine the possibility of late adrenal insufficiency. To

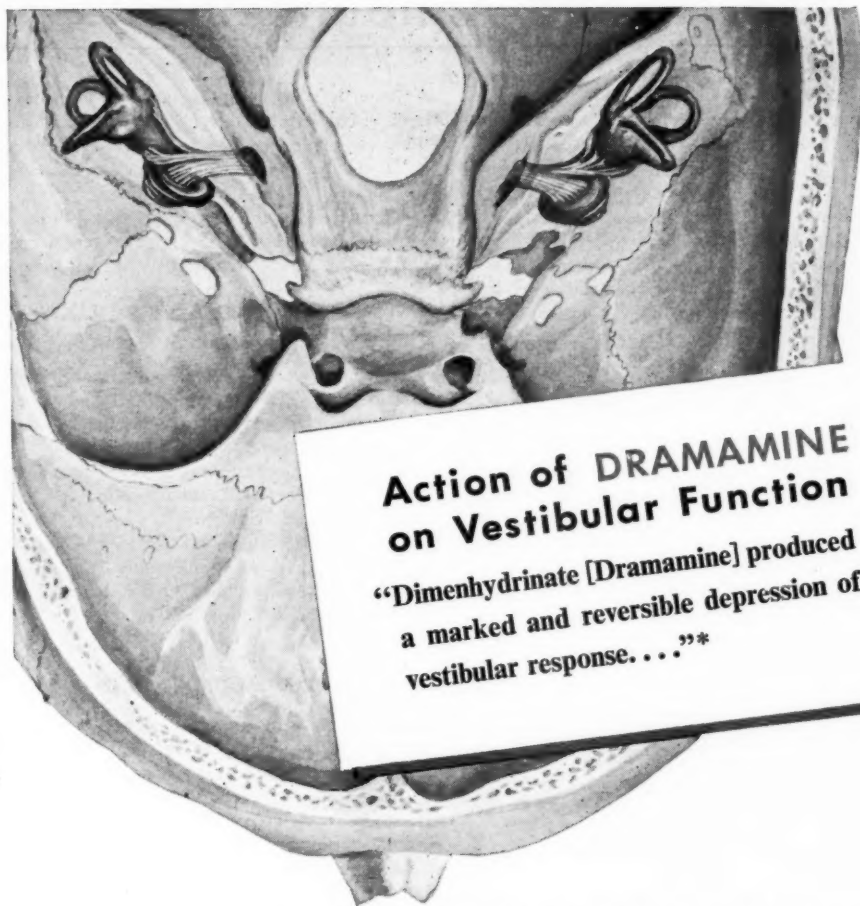
prevent acute adrenal insufficiency from occurring throughout the operation or immediately following removal of an adrenal tumor, the patient should be given glucose and salt solution prior to the operation. 10 cc. of whole corticoadrenal extract should be given intramuscularly the night before surgery and again in the morning prior to sending the patient to the operating room. An intravenous drip containing glucose and saline should be started at the time of operation and prior to opening the adrenal cavity, 10 cc. of adrenal cortex extract are given intravenously. If the opposite gland is atrophic or absent, portions of the involved gland should be left if at all possible. If this is not possible adrenal insufficiency should be anticipated and treatment carried out immediately.

Surgical Approach.—Standard surgical approaches to the adrenals are (1) extra-peritoneal nephrectomy incision, (2) the longitudinal lumbo-dorsal incision, (3) the transperitoneal approach through either a transverse or vertical incision of the abdomen and (4) the transpleural route. In our cases the transperitoneal approach has been preferred because it affords visualization of both adrenals as well as the entire abdominal cavity to rule out the possibility of ectopic adrenal tissue. This incision has permitted also better visualization and clamping other vessels of the adrenal before manipulation or removal of the adrenal neoplasms. The abdominal incision should be closed with interrupted stitches of non-absorbable sutures and possibly steel sutures are the best in this regard for these patients have a tendency for infection and their wounds do not heal kindly or readily. This is interesting in light of the experimental evidence to indicate the depressing action of cortisone upon wound healing in experimental animals.

Discussion

DR. HARVEY NELSON: Such an interesting and comprehensive presentation of a condition that most of us see infrequently certainly warrants some comment and discussion. If you have had no more experience with adrenal tumors than I, you are probably more than interested. I recall one recent case that we had. A patient, nineteen years old, came in only because her abdomen had enlarged so that she could not get her dresses buttoned any longer. Physical examination revealed a very large tumor. In the course of our diagnostic studies, an intravenous pyelogram was taken which revealed a large adrenal tumor pushing the kidney down into a horizontal position but still revealing a functioning kidney. In order to remove the tumor, together with the kidney, a "U"-shaped incision was necessary extending all the way from the costo-vertebral angle posteriorly around the lower ribs to the xiphoid process anteriorly. Postoperatively, the patient got along quite well for six months, when she developed some pelvic metastases which seemed to arise from the region of the ovaries. A panhysterectomy was done, removing also a considerable amount of pelvic peritoneum. On the occasion of each operative procedure, she seemed to respond quite well to x-ray therapy. Subsequent to the second operative procedure, she was again all right for a period of six months when she began to develop pains in her lower extremities which ultimately progressed to a partial paralysis due to metastases in the dorsal region of her spine and external to the dura. A laminectomy

(Continued on Page 268)



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*Gutner, L. B.; Gould, W. J., and Batterman, R. D.: Action of Dimenhydrinate (Dramamine) and Other Drugs on Vestibular Function, Arch. Otolaryng. 53:308 (March) 1951.

RESEARCH IN THE SERVICE OF MEDICINE **SEARLE**

◆ Reports and Announcements ◆

AERO MEDICAL ASSOCIATION

The twenty-third annual meeting of the Aero Medical Association was held at the Statler Hotel, Washington, D. C., March 17 to 19. Attending the meeting for the first time were aviation medicine representatives from twenty other nations.

A full program of scientific papers, exhibits and demonstrations showed many of the latest trends and developments in the field of aviation medicine. In addition, the space medicine group of the organization presented a series of discussions in their specialized field of research.

AMERICAN COLLEGE OF ALLERGISTS

The eighth annual meeting of The American College of Allergists will be held this year at the William Penn Hotel in Pittsburgh, Pennsylvania, on April 7, 8 and 9. In addition to twenty addresses on general topics and special scientific investigations, there will be round tables at luncheons and sectional meetings devoted exclusively to the psychosomatic aspects of the allergic patient, allergy in infants and children, allergic manifestations in the skin, as well as those seen in the eye, ear, nose and throat.

An innovation for meetings of allergists will be a session devoted to the problems of the allergic patient as met in modern industrial medicine. All reputable physicians are welcome to attend. For more particulars, write The American College of Allergists, LaSalle Medical Building, Minneapolis 2, Minnesota.

GRADUATE COURSE IN ALLERGY

On April 4, 5 and 6 at Pittsburgh, Pennsylvania, The American College of Allergists will offer an instruction course in allergy. Some sixty well-known authorities in the field will give addresses, clinical talks and demonstrations. The program has been designed for physicians in other fields of practice, especially those in general practice, so that they may learn to recognize and manage the allergic component in the complaints of their patients.

For further information and a copy of the program, write the office of The American College of Allergists, LaSalle Medical Building, Minneapolis 2, Minnesota.

MANUSCRIPT EDITING SERVICE

To improve medical journalism, the American Medical Writers' Association has recently established the first Manuscript Editing Service to be conducted by a medical association in the United States. For a small fee, the Association will edit and criticize medical manuscripts (up to 5,000 words). Its aim is to help authors carry out the dictum of Sydney Smith: "The writer does the most who gives his reader the most knowledge and takes from him the least time." The

Association is a nonprofit organization with no salaried officers. Its membership includes a large group of well-known medical editors and writers. Principal purpose of the group is "to help maintain and advance high standards of medical literature."

Further details of the new Manuscript Editing Service may be obtained from the Secretary, Harold Swanberg, M.D., 209-224 W.C.U. Building, Quincy, Illinois.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The regular meeting of the Minnesota Society of Neurology and Psychiatry was held at the Town and Country Club in Saint Paul on March 11. The scientific program included the following presentations:

"Neurophysiologic Testing in Parkinsonism," inaugural thesis by Dr. Andrew J. Leemhuis, Minneapolis.

"A Psychosomatic Study of a Case of Acute Intermittent Porphyria," by Dr. C. Knight Aldrich and Dr. John S. Visher, both of Minneapolis.

"An Electroshock Fatality in an Acute Excitement Complicated by Bronchiectasis," by Dr. B. C. Schiele, Minneapolis.

MINNESOTA TUBERCULOSIS AND HEALTH ASSOCIATION

The name of the Minnesota Public Health Association, the state Christmas Seal organization, has been changed to the Minnesota Tuberculosis and Health Association. Two reasons were given for the inclusion of the word "tuberculosis" in the name of the organization's name: (1) there has been some confusion because of the previous name's similarity to that of the Minnesota Department of Health and other health agencies, and (2) Christmas Seals, the sole means of support of the association, are sold primarily to finance the fight against tuberculosis.

The previous name, Minnesota Public Health Association, was taken in 1914 because the group's leaders wanted to emphasize the importance of an all-out health program to defeat tuberculosis.

County associations affiliated with the state organization are also changing their names from county public health associations to county tuberculosis and health associations.

MINNESOTA WELFARE CONFERENCE

The Minnesota Welfare Conference will be held at the Hotel Saint Paul, Saint Paul, March 31 to April 2.

Several sessions during the annual meeting will be devoted to health and medical discussions. The following items will appear on the program:

"Rehabilitation: The Community's Responsibility" by Mr. Eugene Taylor, assistant professor of the Depart-

(Continued on Page 250)

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1. Lewis, J. M., et al.: JI. Pediatrics 31:496, 1947
2. Kramer, B., et al.: Am. JI. Dis. Child. 73:543, 1947
3. Halpern, G. R., et al.: Science 106:40, 1947
4. Nutrition Reviews 5:286, 1947
5. Clifford, S. H. and Weller, K. H.: Pediatrics 1:505, 1948
6. Popper, H., et al.: Gastroenterology 10:987, 1948
7. Davidson, D. M., et al.: JI. Invest. Derm. 12:221, 1949
8. Nutrition Reviews 6:248, 1948

REPORTS AND ANNOUNCEMENTS

MINNESOTA WELFARE CONFERENCE

(Continued from Page 248)

ment of Physical Medicine and Rehabilitation, New York University College of Medicine. March 31, 2:15 to 3:15 p.m.

"Rehabilitation of the Aging" by Dr. Murray B. Ferderber, Department of Physical Medicine, University of Pittsburgh. April 2, 10:15 to 11:30 a.m.

"Hospital Services in Rehabilitation in Minnesota" by Dr. Robert Barr and Dr. Helen Knudson, Minnesota Department of Health. April 2, 3:30 to 5:00 p.m.

Members of the Minnesota State Medical Association are invited to attend these sessions.

CONTINUATION COURSES

Obstetrics.—A course in obstetrics for specialists in that field will be held at the Center for Continuation Study at the University of Minnesota on April 17 to 19. The visiting faculty member for the course will be Dr. S. M. R. Reynolds, physiologist, Department of Embryology, Carnegie Institution of Washington, Baltimore, and the remainder of the faculty for the course will be announced at a later date. Dr. Reynolds will deliver the annual Duluth Clinic Lecture on the subject, "Newer Concepts of Fetal Circulation," on April 18.

Pediatrics.—The University of Minnesota will present a course in pediatrics on April 21 to 23. The course will be presented at the Center for Continuation Study and is intended primarily for physicians specializing in pediatrics. Emphasis will be placed on infectious diseases as they occur in pediatric practice. Dr. John M. Adams, professor, Department of Pediatrics, University of California, Los Angeles, formerly a member of the Department of Pediatrics at the University of Minnesota, will be the visiting faculty member for the course. Dr. Adams will also deliver the annual Clarence M. Jackson Lecture sponsored by the Phi Beta Pi medical fraternity on the subject, "Respiratory Diseases—Changing Concepts."

Eye, Ear, Nose and Throat.—The University of Minnesota will present a continuation course in eye, ear, nose, and throat problems at the Center for Continuation Study from May 12 to 14. The course is intended for physicians engaged in general practice. One day will be devoted to the consideration of ocular problems, and the remainder of the time will be devoted to those ear, nose, and throat conditions which are most frequently seen in general practice.

Dr. Erling W. Hansen, clinical professor and director, Division of Ophthalmology, and Dr. George M. Tangen, clinical assistant professor, Division of Otolaryngology, will join in the direction of the course, and the remainder of the faculty will include clinical and full-time members of the staff of the University of Minnesota Hospitals.

Allergy and Hematology.—The University of Minnesota will present a course in allergy and hematology at the Center for Continuation Study on May 15 to 17. The course is intended primarily for physicians engaged in general practice but will be of interest to internists and pediatricians as well. One day will be devoted to the consideration of hematologic problems, and the remainder of the session will deal with diagnosis and management of allergic disorders.

Dr. Will Cook Spain, an outstanding authority in the field of allergy, will be the visiting faculty member for the course, while the remainder of the faculty will include clinical and full-time members of the staff of the University of Minnesota Medical School and the Mayo Foundation. The course will be presented under the direction of Dr. C. J. Watson, professor and director, Department of Medicine, at the University of Minnesota Medical School.

HENNEPIN COUNTY SOCIETY

Dr. Claude J. Ehrenberg, Minneapolis, will be installed as president of the Hennepin County Medical Society next October, succeeding Dr. William R. Jones.

Other officers elected at a meeting of the society in Minneapolis on February 4 include Dr. Horatio B. Sweetser, Jr., first vice president; Dr. Dale H. Correa, second vice president; Dr. L. Haynes Fowler and Dr. Robert E. Priest, members of the board of directors; Dr. Thomas J. Kinsella and Dr. Reuben A. Johnson, board of censors; Dr. Lawrence R. Boies and Dr. Thomas Lowry, board of ethics; Dr. James A. Blake and Dr. Frank R. Hirschfeld, board of trustees; Dr. Ralph H. Creighton, Dr. Willard D. White and Dr. Elmer T. Ceder, delegates to the Minnesota State Medical Association.

MINNESOTA ACADEMY OF MEDICINE

(Continued from Page 243)

one could scarcely advocate gastric resection on a well person in order to prove that his healed gastric ulcer was definitely benign. Furthermore, as Dr. Wangenstein has indicated, gross and histologic studies of a specimen may be in error and therefore in some cases a clinical evaluation of the benignancy or malignancy of an ulcer may be more accurate.

I wish to re-emphasize that this study was not done to determine how gastric ulcers should be treated but merely to determine the incidence of malignancy in the garden variety of gastric ulcer seen in private practice. This is less than 2 per cent. In order to make this study more valuable we will continue to follow these same patients for another ten years as well as to add new cases to the group.

The meeting was adjourned.

WALLACE P. RITCHIE, M.D., *Secretary*

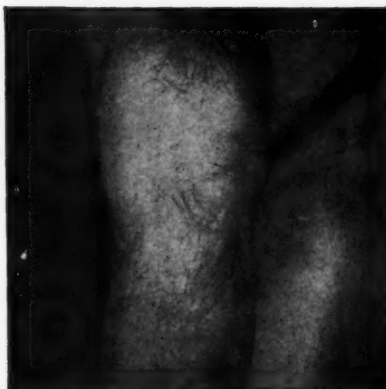
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Ward, L. E., Slocumb, C. H., Polley, H. F., Lowman, E. W., and Hench, P. S.: *Proc. Staff Migs., Mayo Clinic* 26: 361, September 26, 1951.

Literature on Request

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Woman's Auxiliary

CHAIRMAN REPORTS ON PUBLIC RELATIONS PROGRAM

Mrs. L. J. Leonard, Minneapolis

The recruitment of nurses occupies position number one on the auxiliary's public relations program this year. At the AMA Public Relations Conference held in Los Angeles last December, which was attended by well over five hundred, \$10,000 was subscribed to the nurse recruitment program. The national auxiliary contributed \$500 to the American Nurses Association last year to aid in the development of their program and over 300 scholarships and loans to student nurses have been given thus far.

Most of the county auxiliaries are aware of the great need for nurses and are making every effort to acquaint young women students in their various communities with the requirements and advantages of the profession, also offering whatever aid they can. It has been suggested that the auxiliary go one step farther and urge women's organizations, such as the PEO, Woman's club or other service organizations to sponsor student nurses.

A new training program will soon come from national headquarters which will equip nurses to make a better approach to people who come to the doctor's office. It is urged that this be given fullest support.

Also, if it would come under auxiliary jurisdiction, try to get a good representative nurse to attend the National Nurses Convention in Atlantic City in June.

It is vital that members urge their husbands to contribute to medical schools. Their need is great and if aid is not given, they may be forced to accept federal grants. Legislation is constantly being advocated in this direction. Auxiliaries all over the country are beginning to contribute. "Check your budget for a little surplus," says the national public relations chairman, Mrs. Theodore Heinz. "We would like \$100 from each state auxiliary."

Remember that socialized medicine is not a dead issue. To quote Dr. Louis Bauer, AMA's president-elect:

"This country is fast moving down the road marked Socialism. 1952, a presidential election year, offers physicians and wives an opportunity to whip socialism at the polls. Every physician, as a citizen, should resolve to become actively engaged in this campaign. Socialism can easily come to this country without a vote; it can come by default."

National statistics show that less than fifty per cent of qualified voters went to the polls and the medical profession had the shameful record of only thirty-six per cent. At the state Board meeting in January, at the Curtis hotel, Minneapolis, a chairman reported that through efforts of their auxiliary, the vote of the medical profession was brought up to eighty-three per

cent, which shows what can be accomplished if the effort is made.

The American Medical Association is constantly providing new available literature. "A Doctor for You" is a recent one and another dealing with the Code of Ethics which will be called "The Code Your Doctor Lives By," will be available soon. It has been suggested that each auxiliary appoint a distribution chairman to superintend the delivery of these pamphlets and also reprints of magazine articles which are available, to the libraries in her town, to the hospital waiting rooms, school teachers, ministers and officers of women's groups. They are wonderful materials to hand out at medical society booths at county fairs. Now is the time to plan in advance to make full use of these excellent PR aids. Public opinion moulds slowly but surely. Be a vigilant worker.

A gift suggestion for a physician husband: One of AMA's new plaques for use in doctor's offices. It is designed to encourage patients to talk freely with their physician in order that misunderstandings about services or fees may be avoided. The plaque costs \$1 postpaid.

COUNTY AUXILIARY HOLDS ANNUAL NURSE TEA

Members of the Mower County Medical auxiliary recently attended the second annual tea for sophomore, junior and senior girls interested in nursing or its allied branches. The committee in charge of arrangements consisted of Mrs. C. L. Sheedy, Mrs. P. A. Lommen, Mrs. Edward C. Sargent and Mrs. T. M. Seery.

Signing blood donors, arranging appointments and helping at the blood donor station have also become auxiliary projects.

STATE COMMITTEE CONTINUES WORK

Mrs. L. G. Culver, Saint Paul

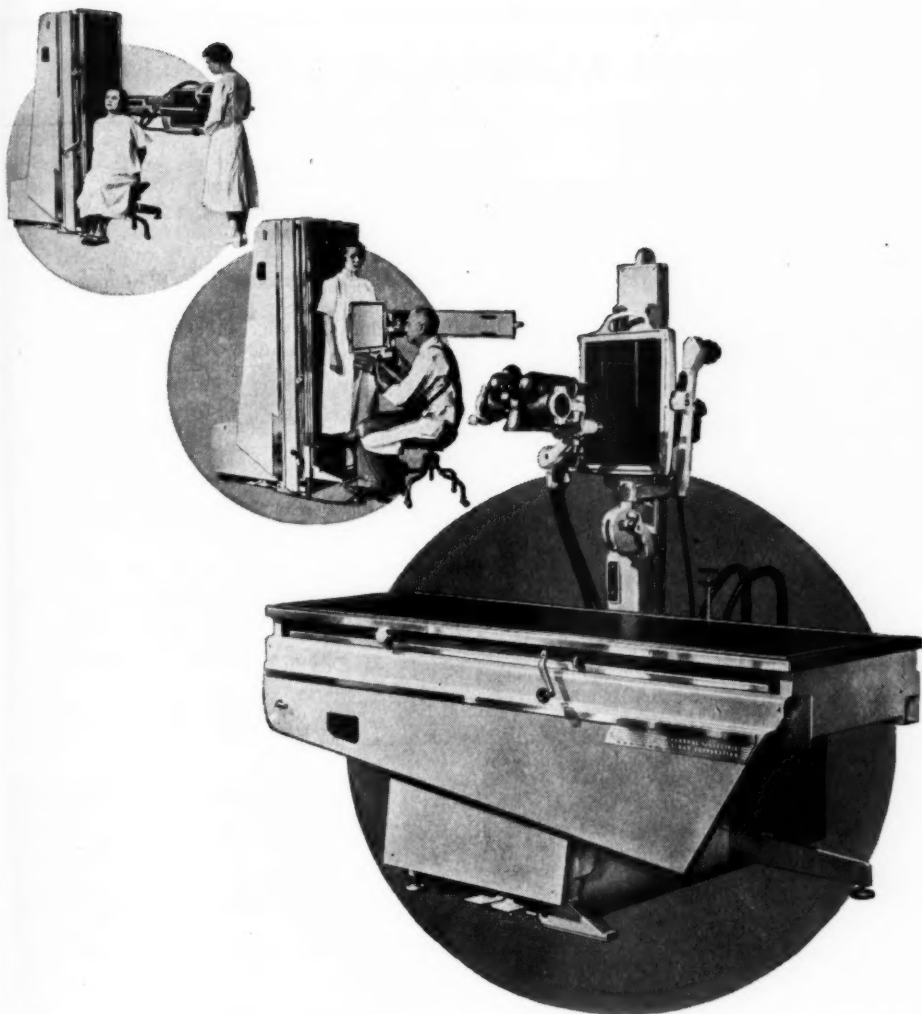
The Committee on Medical and Surgical Relief of the Woman's Auxiliary to the Minnesota State Medical Association is continuing in the collection, from doctors' offices, of surplus medical and surgical supplies. A letter has been sent to county committee chairmen, encouraging continuation of the work on a county basis.

Mr. Pedro Velasco, 3009 Ewing Avenue North, Robbinsdale, Minnesota, is still anxious to receive supplies so that as soon as two tons of supplies have been accumulated, he will be able to ship them to the Philippines.

In 1950, 1,799,800 Americans were injured in traffic accidents.

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In Memoriam

NORBERT P. BLOCHOWIAK

Dr. N. P. Blochowiak, a young physician of Rushford, Minnesota, tragically met death on January 20, 1952, when his car slid into a freight engine. He was only twenty-nine years of age and had come to Rushford just two and a half years ago, after serving an internship at Ancker Hospital in Saint Paul.

Dr. Blochowiak was born June 29, 1922, at Pulaski, Wisconsin. He obtained his medical degree from the University of Minnesota Medical School in 1948, his study having been interrupted by two years in the army.

He had become an active worker in community affairs in the short time he had lived at Rushford and belonged to the Commercial Club, the Lions Club, the American Legion. He was a member of the Winona County Medical Society, the Minnesota State Medical Association and the American Medical Association. Lately, he had taken a leading part as chairman of the investigating committee for Rushford's new Youth Center.

On June 15, 1946, he married Beverly Bornitz of Lamolille. He leaves his wife and two small children, Kenneth Robert and Patricia Ann. His mother, seven brothers and two sisters also survive him.

EDWARD C. BOXELL

Dr. Edward C. Boxell, Saint Paul, died January 13, 1952, at the age of eighty-eight.

Dr. Boxell was a member of the Class of 1894 at the University of Minnesota medical school. He practiced for a short time at Annandale and Saint Paul Park before moving to Saint Paul.

Dr. Boxell is survived by his wife, Mary; and a son Allan, both of Saint Paul.

HANS JOHNSON

Dr. Hans Johnson of Kerkhoven, Minnesota, died January 13, 1952 in the Abbott Hospital, Minneapolis, following injuries received December 17, 1951, in an automobile accident near Spirit Lake, Iowa. He was seventy-one years of age. His wife, Estelle, seriously injured in the crash, is recovering at her home.

Dr. Johnson was born January 14, 1881 at Royalton, Minnesota. He graduated from the University of Minnesota medical school in 1904. He practiced at Middle River, Minnesota, and at Murdock, Minnesota, before he located at Kerkhoven in 1907. He was honored last summer by his fellow citizens with a "Dr. Johnson Appreciation Day."

He took an active interest in local affairs, having been mayor of Kerkhoven in 1917-18 and again in 1933-35. He served on the school board from 1918 until his death and was president of the board from 1927 on. He also

served as health officer and as physician on the Swift County Selective Service Board.

Dr. Johnson married Estelle Quam of New London, Minnesota, June 6, 1907. She and four children, Dr. John W. Johnson of St. Louis Park, Minnesota, Lester of Carmel, Indiana, H. Clinton of Huntington Woods, Michigan, and Mrs. Merle (Dagmar) Gribble of Honolulu survive him. One son, Gordon, was killed in action at Duren, Germany, in 1944.

OSCAR O. BURTON

Dr. Oscar O. Burton, formerly of Albert Lea, died at his home in Brattleboro, Vermont, December 31, 1951.

Oscar Burton was born in St. Albans, New York, and came to Alden, Minnesota, with his parents about 1876.

Dr. Burton married Alice Hibbs and practiced in Albert Lea for some ten years before moving to Florida for his health. At one time, he was secretary of the Freeborn County Medical Society.

From Florida, Dr. Burton moved to Wellesley, Massachusetts, and then to Westminster, Vermont. For the last few years, he has been health officer and town physician for the city of Brattleboro.

M. W. KEMP

Dr. M. W. Kemp, former superintendent of the State Hospital at Moose Lake, Minnesota, died at his home in Madison, Indiana, February 6, 1952, of a heart attack. He was fifty-six years of age.

Dr. Kemp spent eight years as superintendent of the State Hospital in Moose Lake from 1938 to 1946. Prior to coming to Moose Lake, he was assistant superintendent of the Fergus Falls state hospital from April, 1927, to October, 1935, when he resigned to accept the superintendency of the Anoka state hospital. He left Moose Lake in 1946 to become superintendent of the hospital at Madison, Indiana.

Dr. Kemp is survived by his wife and one daughter, aged fourteen.

JOHN M. ORT

Dr. John M. Ort, former member of the staff of the Mayo Clinic, died on August 25, 1951, of a cerebrovascular accident.

John M. Ort was born May 31, 1896, at Home City, Ohio. He received the degree of M.S. in 1919, and Ph.D. in 1924 from Ohio State University, Columbus. He was instructor at Cass School of Applied Science in Cleveland from 1919 to 1922, was assistant in physical chemistry at Ohio State University from 1922 to 1923, and a Du Pont fellow in chemistry at Ohio State University in 1923-1924. He came to the Clinic as first

(Continued on Page 256)

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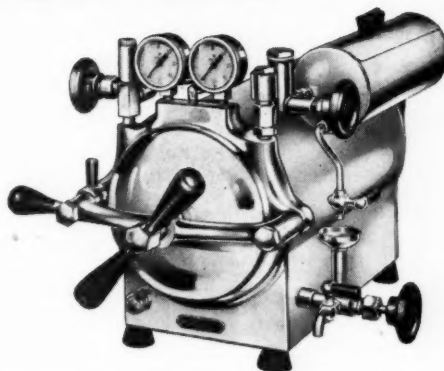
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Therapy for Vascular Headache to Reverse the Physiologic Disturbance

Headache, a problem encountered in all kinds of medical practice, may occur in association with any of a variety of disorders, some organic, other purely functional.

Among the several types, functional headaches present the greatest problem because of their obscure etiology and recurrent nature.

Among these are:

Migraine (both classical and variant forms)
Tension headache
Psychogenic headache
Histaminic cephalgia

Wolff and his co-workers established that the pain of these headaches is due to disturbance of the tonus of cranial blood vessels — hence the term *vascular headaches*.

The craniovascular changes associated with the several phases of the typical migraine attack are:

Vasoconstriction — to which the visual prodromata are attributable. It is possible to abort the attack during this phase in all but a few cases. (See treatment below.)

Vasodilatation — as the vessels lose their tone, exaggerated pulsations set in, resulting in the throbbing pain which characterizes vascular headache. Treatment for the attack is still effective during this phase. (See below.)

Vessel Edema — if the vasodilatation continues for too long, vessel walls become edematous; this changes the character of the pain to a steady, intense aching. The attack can now no longer be checked, even with maximum dosage of specific drugs. Moreover, sustained headache often induces reflex neck muscle tension, a source of residual pain.

Therapy: 1. Reduce the frequency of attacks — psychotherapy and regulation of living habits to avoid fatigue and nervous tension.

2. Relieve the acute attack — of the numerous drugs which have been tried, ergotamine and its derivative preparations have proved most effective. The newest product is oral tablets of Cafergot® N. N. R. (ergotamine with caffeine 'Sandoz'). When dosage is adjusted to the needs of the individual, Cafergot will give good relief in 85% of cases. It enables a greater number of patients to benefit from early administration since the oral route simplifies treatment as compared to parenteral therapy.

The dosage procedure is:

1. Take 2 tablets at first sign of the attack.
2. If attack continues, take one additional tablet every ½ hour until attack is terminated (max. 6 tabs. per attack).

Many migraine patients delay taking medication until the attack is at its height. Explicit dosage instructions may be forgotten unless the patient comes to realize their importance. Therefore, to encourage adherence to correct procedure, we have prepared pads outlining detailed dosage instructions. Supplies of these INSTRUCTION SLIPS will gladly be sent upon request.

GENERAL REFERENCES: DeJong, R.: Chicago M. Soc. Bull 34: 106, 1931. Friedman, A.: Modern Headache Therapy, St. Louis, C. V. Mosby Co., 1951. Wolff, H.: Headache and Other Head Pain, N. Y., Oxford Univ. Press, 1948.

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JOHN M. ORT

(Continued from Page 254)

assistant in the Division of Physics on July 22, 1924. He was appointed assistant professor of biophysics, the Mayo Foundation, July 1, 1925.

Dr. Ort left the Clinic and Foundation in September, 1932, at which time he became engaged in physical chemical research for Swift and Company, Chicago, until August 15, 1933. Since that time his work has included physical chemical research for E. R. Squibb and Sons, Brooklyn, New York, and the directorship of research at the Carroll Dunham Smith Pharmacal Company, New Brunswick, New Jersey.

Dr. Ort was a member of the American Chemical Society, the American Society of Biological Chemists, the American Institute of Chemists, the American Association for the Advancement of Science and Sigma Xi.

MALCOLM C. PFUNDER

Dr. Malcolm C. Pfunder of Minneapolis died on January 23, 1952, at the age of sixty-four.

Born at Two Creeks, Wisconsin, January 19, 1888, Dr. Pfunder received the degrees of B.S. and B.A. at Ripon College and an M.D. at Rush Medical College in 1919. He interned at Miles City Hospital, Miles City, Montana, and at Worrall Hospital, Rochester, Minnesota, after which he took postgraduate training in Ophthalmology and Otolaryngology for eighteen months at the Mayo Foundation.

After practicing from 1922 to 1929 at Miles City, Dr. Pfunder moved to Minneapolis where he practiced his specialty. He had the appointment of Assistant Clinical Professor of Ophthalmology at the University of Minnesota Medical School and was chief of the Eye, Ear, Nose and Throat service at the Minneapolis General Hospital. He was a member of the American College of Surgeons, the Pan American Association of Ophthalmology, the Hennepin County Medical Society of which he was a past president, the Minnesota Academy of Ophthalmology and Otolaryngology, the Minnesota State Medical Association and the American Medical Association.

Dr. Pfunder held memberships in the Minneapolis Athletic Club, the National Skeet Shooting Association, the Big Game Club, the Zuhrah Temple of the Shrine, the Scottish Rite Lynnhurst Masonic Lodge, Alpha Omega Alpha and Phi Chi. He was a member of Knox Presbyterian Church.

Surviving are his wife, Mrs. Edna Gilkey Pfunder; a daughter, Mrs. Curtis H. Carlsen, and a son, Malcolm G. Pfunder.

GEORGE E. RUNNERSTROM

Dr. George E. Runnerstrom, former Minneapolis physician, died January 26, 1952, in Engelwood, California. A stroke was given as the cause of death. Dr. Runnerstrom had been in ill health for some time.

George Runnerstrom was born in Otisco township, Minnesota, in 1892 and attended Waseca schools. He obtained his M.D. degree at the University of Minnesota.

MINNESOTA MEDICINE

IN MEMORIAM

He was married in 1918 to Mata Mills of Minneapolis, who survives.

Dr. Runnerstrom served on the staff at the Fort Snelling veterans hospital for twenty-two years, until 1939 when he went to Washington, D. C., where he continued in veterans work until 1945. At that time, in failing health, he retired from medical practice and moved to California.

In addition to his widow, he leaves one son Warren, at home, and one daughter Ruth, now married and living in St. Louis, Missouri.

CARL B. TEISBERG

Dr. Carl B. Teisberg, examining physician for the Minnesota Athletic commission, died Saturday, February 9, 1952, at his home in Saint Paul. He was seventy-two years old.

Practicing physician since 1910 in Saint Paul, Dr. Teisberg was a graduate of Luther College at Decorah, Iowa, and the University of Minnesota medical school. He practiced in Pine City prior to moving to Saint Paul.

Survivors include the widow, Mary V.; a daughter, two sons, four sisters and three brothers.

T. J. TRUTNA

Dr. T. J. Trutna, practicing physician in Silver Lake, Minnesota, since 1906, died at his home Friday morning, February 8, 1952. He was seventy-three years of age.

Dr. Trutna had practiced medicine in Silver Lake more than forty-five years, and had been a resident of

that town since 1892 when he came with his family to Minnesota from Wahoo, Nebraska. He was a veteran of World War I, and organizer and first commander of American Legion Post No. 142 in Silver Lake.

Members of the post served as honor guards at the funeral service and sounded taps at the graveside service.

Dr. Trutna studied medicine at the University of Minnesota and came to Silver Lake in 1906 after one year as an intern at Asbury Hospital in Minneapolis.

Dr. and Mrs. Trutna were married January 1, 1919, while the doctor was home on furlough.

Survivors include his wife, Eleanor; two sons, Raleigh of Hastings, Minnesota, and Roger of Saint Paul; and two brothers, Anthony H., Mohall, North Dakota, and Frank, West Union, Minnesota.

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Of General Interest

The **Variety Club Heart Hospital** at the University of Minnesota, with a bed capacity of forty for children and thirty-eight for adults, has about twenty vacant beds for children. The Heart Hospital receives patients from Minnesota, North Dakota, South Dakota and the western border of Wisconsin. Admission inquiries should be addressed to the Director of Admissions, University Hospitals, Minneapolis, Minnesota.

Dr. Winston R. Lindberg is now associated with his father, Dr. A. C. Lindberg, at 600 Physicians and Surgeons Building, Minneapolis, in the practice of ophthalmology and ophthalmic surgery. The younger Dr. Lindberg recently completed a two-year residency at John Gaston Hospital, Memphis, Tennessee.

Dr. W. C. Stillwell, of the Mankato Clinic, Mankato, was among those who attended the nineteenth annual meeting of the American Academy of Orthopedic Surgeons at the Palmer House, Chicago, from January 26 through 31.

Dr. Ralph F. Mach, formerly of Rush City, moved to Pine City early in February. A graduate of the University of Minnesota Medical School, he served his internship at Mercy Hospital, Loyola University Clinic, Chicago. He began practice at Foley in 1947, then moved to Rush City in 1948 and was associated in practice with Dr. J. E. Halpern for four years.

Word was received early in February that **Dr. David M. Berkman** has retired from the staff of the Mayo Clinic, Rochester, and is now living at Ononoco.

The **Minnesota Tuberculosis and Health Association** (formerly called the Minnesota Public Health Association) has established the H. Longstreet Taylor grant of \$7,500, to be made annually to the University of Minnesota for tuberculosis research. It will be administered by Dr. J. Arthur Myers, professor of preventive medicine and public health at the University. Dr. H. Longstreet Taylor was largely responsible for the initiation of the campaign for the prevention of tuberculosis in Minnesota.

After practicing internal medicine at Saint Paul for the past five years, **Dr. John C. Hays** has moved to Colorado Springs, Colorado, where he is now associated with the Colorado Springs Medical Center.

Mr. W. B. Schoenbohm has been selected as director of the **Minnesota Society for Crippled Children and Adults**. Mr. Schoenbohm was formerly

director of the hospital for severely handicapped children at the University of Iowa and president of the Iowa Society for Crippled Children and Adults. He succeeds Mr. Robert Booth as director of the Minnesota society.

More than 150 guests attended an open house in Winona on February 5 at which **Dr. and Mrs. W. F. C. Heise** celebrated their fiftieth wedding anniversary. Following the open house, a family buffet dinner continued the golden wedding anniversary celebration.

Dr. Heise has practiced medicine at Winona since his graduation from Rush Medical College. He and his five sons, all physicians, founded the Heise Clinic at Winona.

Dr. Ezra V. Bridge, superintendent of the Cannon Falls Sanatorium, spoke on the "Modern Treatment of Tuberculosis" at a joint meeting of several nurses groups at St. Lucas Hospital, Faribault, on February 11.

Dr. Abbott Skinner and **Dr. Charles Eginton** have become associated in the practice of surgery and have established offices at 666 Lowry Medical Arts Building, Saint Paul. Dr. Skinner received his medical training at Harvard Medical School and took his postgraduate study at Ancker Hospital, Saint Paul. Dr. Eginton, a graduate of the University of Minnesota Medical School, did postgraduate work as a fellow in surgery at the Mayo Foundation, Rochester. Both physicians have M.S. (Surgery) degrees and are diplomates of the American Board of Surgery.

Mr. G. Ray Higgins, formerly director of student unions at the University of Minnesota, has been appointed executive secretary of the **Minnesota Heart Association**. He succeeds Mr. Fred L. Wheeler, former executive secretary.

Dr. F. W. Behmler, Morris, was elected president of the Minnesota State Board of Health at its meeting in Minneapolis on February 5. Dr. Behmler has been a member of the board since 1940 and was recently reappointed for another three-year term. He served as vice president of the board for several years. He has practiced medicine at Morris for fifteen years.

Dr. W. O. Finkelnburg, Winona, discussed the human heart and cardiac problems of the middle-aged at a businessmen's meeting in Winona on February 6. The showing of motion pictures and the distribution of literature on the subject were included at the meeting.



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Dr. John W. Gridley has joined the staff of a clinic at Granite Falls on a temporary basis which may become permanent. He previously practiced at Glencoe for six years. For the six months before his move to Granite Falls, he practiced at Watertown, South Dakota.

* * *

Dr. S. A. Slater, superintendent of Southwestern Minnesota Sanatorium, with the aid of local physicians, officiated at the Mantoux testing of pupils in the Worthington, Minnesota, schools on February 15.

* * *

Dr. Edwin Knight, of Swanville, presented a dis-

cussion of rheumatic fever followed by a period of questioning at a meeting of the Northwest Nursing Auxiliary at Little Falls in January.

* * *

Dr. C. A. Owen, member of the Department of Clinical Pathology at the Mayo Clinic, spoke on "Science of Tomorrow" before a meeting of the Southern Minnesota Science Teachers League held as a "science fair" at Mankato State Teachers College, February 23.

* * *

Tribute was paid to the untiring service of the late Dr. H. C. Doms, as a physician and surgeon, as the person who helped to give the community a modern



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hospital and as a civic leader, at special ceremonies held in January. The occasion was the presentation of a framed picture of Dr. Doms to the Murray County Memorial Hospital. The picture was presented by the Slayton Civic and Commerce Association, of which Dr. Doms was an organizer and past president, and the Murray County State Bank, of which he was a director for a number of years.

* * *

Dr. Viktor Wilson, of the Minnesota State Health Department, discussed activities of the Health Department in general with a group of physicians and medical students taking graduate work at the University of Minnesota when they made a tour of health units and a hospital in Rochester early in February. Countries represented in the group were Turkey, Formosa, Thailand, Mexico, Ceylon, and Germany. Local health and sanitation techniques of the Rochester-Olmsted County health unit, the health center, St. Mary's Hospital, and the new sewage treatment plant in Rochester were objects of special interest to the students who will carry the knowledge thus gained back to their own countries in setting up similar health units.

* * *

Dr. Walter M. Boothby, of Albuquerque, New Mexico, formerly of Rochester, Minnesota, was awarded the order of Commander of the North Star by the King of Sweden the latter part of January. The ceremony of presentation was made by Gunnar Dryselius, Swedish Consul at Houston, Texas, at a reception held in the home of Dr. and Mrs. William R. Lovelace, II, also former Rochester residents. Dr. and Mrs. Boothby have lived in Albuquerque since last November, when Dr. Boothby became a member of the Lovelace Foundation for Medical Education and Research at the invitation of Dr. Lovelace, former pupil of Dr. Boothby.

* * *

Dr. M. G. Flom, of Zumbrota, has been appointed to the local board of health for the coming year.

* * *

CORRECTION

Two errors, which occurred in printing the list of Physicians Licensed in 1951 in the December, 1951, issue of MINNESOTA MEDICINE have just been called to our attention.

On Page 1192, under the subhead "Reciprocity Candidates," the name immediately following that of Buchanan, Gerald S. should be spelled as follows: ELLERTSON, Jr., Leonard Melvin.

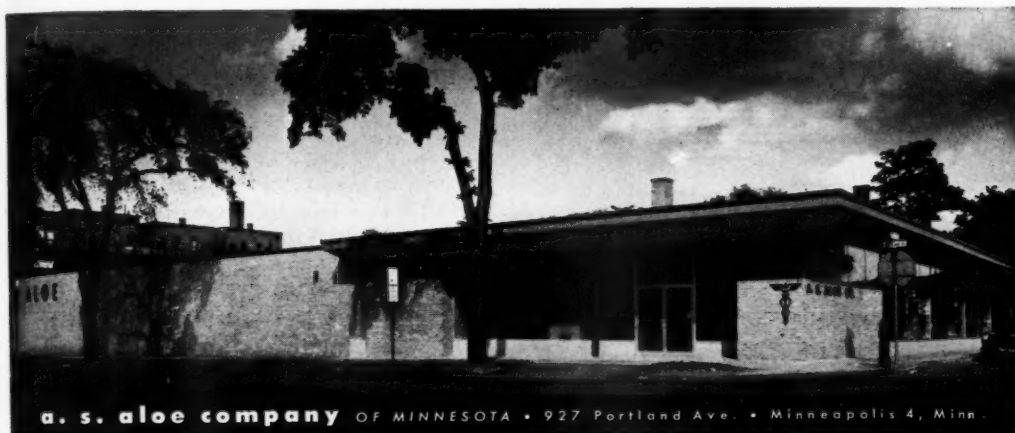
On Page 1196, under the subhead "National Board Candidates," the name immediately following that of Lovelace, Jr., Daniel Dudley, should read: MacSWEEN, George Burton William (in place of Westby, Norval Martin).

The errors occurred in the printing shop when final corrections were being made on the page proofs and were not caught in proof reading. Our apologies to the gentlemen involved and to the Minnesota State Board of Medical Examiners!



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Dr. Harry W. Sturmer, of Minneapolis, first member of the organized naval reserve in Minneapolis to be called to active duty after the Korean outbreak, has been placed on the Navy's inactive list and has resumed practice with the Nicollet Clinic and the Veterans Administration at Fort Snelling. Dr. Sturmer, as a Navy lieutenant, was second in charge of orthopedic surgery at Great Lakes Naval Training Station. He is a veteran of World War II.

* * *

"The Human Heart" was the subject of an address by **Dr. Paul Reed** before a meeting of the Virginia, Minnesota, Kiwanis Club on February 5.

* * *

Dr. James W. Kernohan, head of the section on pathologic anatomy at the Mayo Clinic, was elected to the Board of Directors of the Mayo Association at the Association's annual meeting in February. Dr. Kernohan succeeds Dr. J. deJ. Pemberton, who retired from the Board.

* * *

Dr. James H. DeWeerd, a member of the Mayo Clinic's section on urology, has been awarded the J. William White scholarship for foreign travel and study in surgery. Dr. and Mrs. DeWeerd will travel in Europe, on the scholarship, during June and July this year. The scholarship is awarded from time to time to outstanding fellows of the Mayo Foundation who have gained an advanced degree and are recom-

mended by the Foundation's medical graduate committee. Dr. DeWeerd received his M.D. degree from the University of Michigan in 1941 and joined the Mayo Foundation as a fellow in surgery in 1946. He became a first assistant in 1948.

* * *

Dr. R. R. Cranmer, vice president of Minnesota Medical Service, Inc., was elected as a commissioner to the Blue Shield Commission at the conference of the Tenth District Blue Cross-Blue Shield representatives held in Iowa in January. Elected a commissioner to the Blue Cross Commission was Arthur M. Calvin, executive director of the Minnesota Hospital Service Association.

* * *

Dr. Shelley Chou, fellow in neurosurgery at the University of Minnesota, discussed his work with radioactive dyes in locating brain tumors at a meeting of Twin Cities medical technologists in Northwestern Hospital, Minneapolis, February 14.

* * *

Highest rating in the United States in national board examinations was the accolade given to graduates of Minneapolis General Hospital's school of nurse anesthetists of the class of 1951. This message was received by Kenneth Holmquist, superintendent of the hospital, from the national organization of nurse anesthetists giving the examination. The General Hospital school is headed by Dr. Christine Furman.



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Dr. V. A. Schulberg, practitioner in Arlington, Minnesota, the past five years, has moved to Newport, California, where with **Dr. Norman Carlson** of Watertown, Minnesota, and **Dr. Arnold Naegeli** of Saint Paul, he will become a member of a clinic group.

* * *

Dr. D. M. Siperstein, of Minneapolis, spoke on "Miracle Drugs" at a meeting of the Cerebral Palsy Foundation, Inc., held in Minneapolis on February 27.

* * *

Dr. Helen Fukushima, of Tokyo, who is engaged in medical research work at Miller Hospital, Saint Paul, recently addressed an audience of Saint Paul women on the subject "Missionary Work in Japan."

* * *

Dr. Milton W. Plucker, of Omaha, Nebraska, has informed residents of Storden, Minnesota, that he expects to establish a medical practice there in early July. **Dr. Robert W. Sawtell**, a schoolmate of Dr. Plucker, is planning to establish a practice in Jeffers, Minnesota, at about the same time.

* * *

Dr. R. L. Parker, of Rochester, participated in a continuation course on therapy of cardiovascular diseases at the Center for Continuation Study, University of Minnesota, in Minneapolis in February. He presented a paper entitled "The Management of Acute Coronary Thrombosis."

* * *

Dr. J. Arnold Bargen and **Dr. John M. Waugh**, of the Mayo Clinic, presented papers before the Minneapolis Surgical Society, at its February meeting, entitled, respectively, "Conservative or Medical Management of Diverticulitis of the Large Intestine" and "Management of Diverticulosis."

* * *

Mrs. William J. Mayo, widow of one of the founders of the Mayo Clinic, died Friday, February 1, 1952, in her winter home at Tucson, Arizona, following a stroke, at the age of eighty-seven. Born Hattie May Damon, Mrs. Mayo was the daughter of Mr. and Mrs. Eleazor Damon, pioneer Rochester, Minnesota, settlers. Mrs. Mayo and "Dr. Will" were married November 20, 1884. She became known to thousands as a devoted homemaker and mother and for her charm as hostess to the clinic staff, to visiting doctors and friends. Mrs. Mayo is survived by two daughters, Mrs. Waltman Walters and Mrs. Donald C. Balfour, eight grandchildren and nineteen great grandchildren.

* * *

Dr. Harold S. Diehl, dean of the University of Minnesota college of medical sciences, together with four other doctors, recently completed an inspection tour of medical care facilities of the Pacific Coast naval district, and Pacific command installations in Hawaii. On the return voyage installations on the USS *Repose* assigned to Korean waters for the past sixteen months, were inspected. The trip was made

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at the invitation of the Secretary of the Navy and the Surgeon General. Dr. Diehl's report upon his return was laudatory of the medical care being given to our fighting forces in Korea.

* * *

Endowment of a research professorship in medicine, primarily in the field of high blood pressure, at the University of Minnesota, has been made possible through the receipt of a bequest from the estate of the late George S. Clark, prominent Georgetown, South Carolina, lumberman, who died in 1944. His early years were spent in this part of the country in association with the Carpenter lumber interests. After completing a project to reorganize one of the largest lumber mills in the South, Clark retired to Minneapolis in 1942. The bequest to the University, amounting to almost \$400,000 in securities plus an interest in West Virginia coal lands, consists of the residue of the estate after payment of cash legacies to relatives, friends and Georgetown charities.

HOSPITAL NEWS

At a meeting of **St. Joseph's Hospital** staff, Saint Paul, held February 12, 1952, the hospital was presented with a plaque of merit by the Minnesota Public Health Association for being first to establish a routine x-ray of all patients admitted.

Dr. John Briggs presided at the meeting, and Dr. Herman Moersch of Rochester represented the Min-

nesota Public Health Association and made the presentation address. He related how, when it had been found that there was a higher incidence of tuberculosis among the nurses of St. Joseph's Hospital than in the general population, steps were taken by the Nurses Alumni Association of St. Joseph's, under the leadership of Miss Lucille McCoy, to raise the necessary funds to undertake the x-ray program.

Among those present were: Dr. A. J. Chesley, executive secretary of the Minnesota State Board of Health; Dr. M. E. Knapp, Father Flynn, Milton Rosen, A. A. O'Leary of the Blue Cross, Ray Higgins, executive secretary of the Minnesota Heart Association, and Dr. F. J. Hill, commissioner of health, Minneapolis Department of Health.

* * *

Dr. Ames W. Naslund is the new chief of staff at **St. Barnabas Hospital**, Minneapolis, with Dr. Archie Smith, vice chief and Dr. Harold I. Buchstein, secretary-treasurer.

* * *

Dr. Robert Cranston was elected chief of staff at **Glenwood Hills Hospital**, Minneapolis, for 1952. Other officers elected are: Dr. Robert Meller, vice president, and Dr. Leslie Caplan, secretary.

* * *

Dr. Edwin G. Knight, of Swanville, was elected president of the staff of **St. Gabriel's Hospital**, Little Falls, at the annual meeting in January. Dr. G. P.

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Schmitz of Little Falls was elected vice president, and Dr. R. J. Stein of Pierz was chosen as secretary. Named to the executive committee were: Dr. S. W. Watson of Royalton, Dr. G. W. Heine, Little Falls, and Dr. R. A. Stoy, Little Falls.

* * *

The Caledonia Community Hospital will have as directors for the next three years Dr. N. T. Norris and Dr. J. J. Ahlfs, elected at the annual meeting in February.

* * *

Dr. L. W. Johnsrud was elected chief of staff of the Hibbing General Hospital at the tenth anniversary meeting of the hospital staff in February. Dr. T. R. Schweiger was chosen vice president and Dr. B. P. Owens was named secretary.

* * *

Elizabeth Kenny Institute, Minneapolis, has received a "full approval" rating from the American College of Surgeons in Chicago, according to Marvin L. Kline, executive director of the Sister Elizabeth Kenny Foundation.

Announcement of the "full approval" rating was made by Dr. Paul S. Ferguson, assistant director in charge of hospital standardization of the American College of Surgeons, following a survey in which the Institute scored 714 of a possible 785 points for a 91 per cent rating.

According to the report, Elizabeth Kenny Institute earned 578 of a possible 640 points in the "essential divisions" survey and 136 of a possible 145 points in the "complementary and service divisions."

BLUE CROSS-BLUE SHIELD

Recent study of sixty of the contracts of other Blue Shield plans in the continental United States has revealed interesting facts about the Minnesota Blue Shield contract. Questions are frequently raised about service and indemnity features of other plans. Premiums, waiting periods, and fees involved in other Blue Shield contracts provide a yardstick by which the liberality of the Minnesota program can be judged.

Without going into the uninteresting details of a statistical analysis it can be stated that about two-thirds of the plans analyzed are of the service type rather than indemnity. Indemnity plans usually provide a stipulated fee which might or might not constitute full payment for the service rendered. If the fee does not represent payment in full, the balance is collectible from the subscriber. Service plans usually include such related services as x-rays, endoscopy and anesthesia. Even among the 20 or more indemnity Blue Shield plans, many are attempting to convert to service contracts, since the latter are recognized as being more liberal from both the subscriber's and physician's viewpoint.

Another interesting comparison was that involving waiting periods for obstetrical cases, previously known conditions and tonsillectomies. The more liberal the policy, the shorter the waiting period. Thirteen of the plans analyzed excluded pre-existing conditions from

contract coverage. Comparatively few plans had shorter waiting periods than those of Minnesota, and in 18 the waiting periods were longer.

Analysis and tabulation of premium rates of the various other plans presented some real difficulties. Only 39 of the service type of Blue Shield plans were reviewed regarding their premium rates. In general, it was found that the premium rates were higher for other Blue Shield contracts than for that of Minnesota, but this statement is particularly true regarding the family type of contract.

From these statements it is found that Minnesota Blue Shield, according to this analysis, (1) belongs with the majority of Blue Shield plans having the more liberal service type of contract, (2) compares very favorably with other Blue Shield plans in the length of waiting periods for confinement cases, tonsillectomies, and pre-existing conditions, and (3) has lower premium rates, especially for family contracts, than many of the other Blue Shield plans. Thus, in each of these features Minnesota Blue Shield's contract is more advantageous to both subscribers and doctors than many other Blue Shield contracts.

FLUORIDATION OF WATER

(Continued from Page 230)

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BOOK REVIEWS

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

AUDITORY TRAINING FOR THE DEAF. By Mary Wood Whitehurst and Edna K. Monsees. \$3.12 postpaid. The Volta Bureau, 1537 35th Street N.W., Washington 7, D. C.

In recent years tremendous advances have been made in the education and communicative retraining of persons with impaired hearing. Modern hearing aids and improved educational methods have made oral communication less difficult.

Auditory training material for deaf and hard of hearing children and for hard of hearing adults has been published. It is believed, however, that this is the first book on the subject specifically written for the deaf adult.

Tests indicate that there are few totally deaf people. Many "deaf" persons have some residual hearing which can be trained and made to reinforce lipreading skill, thus making oral communication increasingly simple.

The material in this book has been prepared with three groups in mind: students in the schools for the deaf; alumni of schools for the deaf; others with severely impaired auditory acuity and discrimination.

The authors are trained teachers who have combined practical experience with modern scientific knowledge.

The lesson material has been tested and retested. There are thirty-eight lessons, each devoted to one or more speech sounds, progressing from the vowel sounds through the more difficult consonant sounds. Detailed instructions are provided, making it possible for the lessons to be used by teachers or by pupils for home study.

JANE WALKER'S BOOK OF ART LECTURES FOR LIP READING PRACTICE. \$3.12 postpaid. The Volta Bureau, 1537 35th Street N.W., Washington 7, D. C.

Jane Walker's contribution to the teaching of lipreading is distinctive and unique. She was not only a skillful teacher of lipreading as a subject, but she was a person so well versed in art that she was able to combine those two subjects with great effectiveness. She was for many years a regularly scheduled lecturer in the Metropolitan Museum of Art—the only teacher of lipreading ever so scheduled. Her lectures were designed for and presented to people who read her lips. They were a source of great inspiration, for her appreciation of art extended far beyond the pictures themselves into a feeling for the artist, his life, and his times.

Along with the book goes a package of prints of some of the pictures by artists discussed in the lectures. Two of the prints were secured by courtesy of the Metropolitan Museum, one has been donated by the *Saturday*



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Evening Post, and still others are the gift of the National Geographic Society.

This book will delight the teacher as well as the student of lipreading.

UNTOWARD REACTIONS OF CORTISONE AND ACTH. By Vincent J. Derbes, M.D., F.A.C.P., Associate Professor of Medicine, Tulane University of Louisiana School of Medicine; Head of Department of Allergy, Ochsner Clinic; Visiting Physician, Charity Hospital of Louisiana at New Orleans; and Staff Member, Foundation Hospital, New Orleans, Louisiana; and Thomas E. Weiss, M.D., Instructor in Medicine, Tulane University of Louisiana School of Medicine; Member of Department of Medicine, Ochsner Clinic; Visiting Physician, Charity Hospital of Louisiana at New Orleans; and Staff Member, Foundation Hospital, New Orleans, Louisiana. 77 pages. Price \$2.25. Springfield, Ill.: Charles C Thomas, 1951.

In only seventy-seven pages of relatively easy reading, the authors have concisely presented a summary of the untoward reactions of ACTH and cortisone. From this book one can obtain clear and quite thorough information regarding the dangers and pitfalls of cortisone and ACTH therapy. The basic physiology of the two compounds is brought out briefly but well. A short but well-selected bibliography is appended to the book.

This book represents a brief résumé of the clinical side effects of ACTH and cortisone.

J. F. ALDEN, JR., M.D.



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Surgical Anatomy and Clinical Surgery, two weeks, starting March 17, June 16.
Surgery of Colon and Rectum, one week, starting March 3, April 7.
Personal Course in General Surgery, two weeks, starting April 14.
Gallbladder Surgery, ten hours, starting April 21.
Basic Principles in General Surgery, two weeks, starting March 31.
Breast and Thyroid Surgery, one week, starting June 23.
Esophageal Surgery, one week, starting June 23.
Thoracic Surgery, one week, starting June 2.
Fractures and Traumatic Surgery, two weeks, starting June 16.
GYNECOLOGY—Intensive Course, two weeks, starting March 17, April 21.
Vaginal Approach to Pelvic Surgery, one week, starting March 31, May 5.
OBSTETRICS—Intensive Course, two weeks, starting April 7, June 2.
PEDIATRICS—Intensive Course, two weeks, starting April 7.
Informal Clinical Course, every two weeks.
Cerebral Palsy, two weeks, starting July 7.
MEDICINE—Intensive General Course, two weeks, starting May 5.
Electrocardiography and Heart Disease, two weeks, starting March 17.
Gastroenterology, two weeks, starting May 19.
Hematology, one week, starting June 16.
Gastroscopy and Gastroenterology, one week Advanced Course, starting June 23.
UROLOGY—Intensive Course, two weeks, starting April 28.
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(Continued from Page 246)

was done and the tumor tissue removed. This was followed by further x-ray therapy which was accompanied by considerable improvement. However, in another six months she had very extensive abdominal metastases and eventually she died. I assume others of you have had similar experiences, particularly those of you who are more in contact with children's surgery. With this in mind, I would like to call upon Dr. T. Chisholm to discuss this paper.

DR. T. CHISHOLM: I would like to express my appreciation to Dr. State's review of this subject. My first comment would be on the recoverability of children who have neuroblastoma. This was formerly thought to be a fatal disease. Metastases have nearly always been quite extensive. These should not deter us from removing the tumor and going after the metastases. I recall one youngster who had a large neuroblastoma in the left adrenal, which on being explored transperitoneally was found to have multiple metastases to the liver. The adrenal was removed, and the metastases were given deep x-ray therapy. The child is still alive seven years after surgery. Another example is a youngster who had a right adrenal neuroblastoma which was removed transperitoneally and was thought to be all right. The child came back with a metastasis to the seventh rib. This was treated by surgical excision and x-ray therapy. The child is still alive seven years later. Too often we are too late and there are studded metastases but those with very few metastases warrant treatment.

The second comment I would like to make is on disorders of nerve cells of the ganglia. Both neuroblastomas and ganglio-neuromas may arise up and down the sympathetic chain. Again, I recall a youngster who had a malignant neuroblastoma. The tumor was partially removed and given extensive therapy. There remained a local nodule palpable in the abdomen which was subsequently removed, and the child was cured.

My third comment has reference to tumors of the medulla. Many, on surgery, are found to be malignant carcinoma of the adrenal cortex, non-functioning in type.

My next comment is in reference to pheochromocytoma which is more common in adults. From my own limited experience, I would say one need not be fearful of giving adrenalin intravenously in enormous amounts at the time the tumor is removed.

My last comment is with reference to abnormal virilism of females. This is a "no-man's-land," extremely treacherous. But whether boys or girls, I am sure we are just beginning to explore the field. Again, I wish to say how thoroughly I enjoyed Dr. State's presentation.